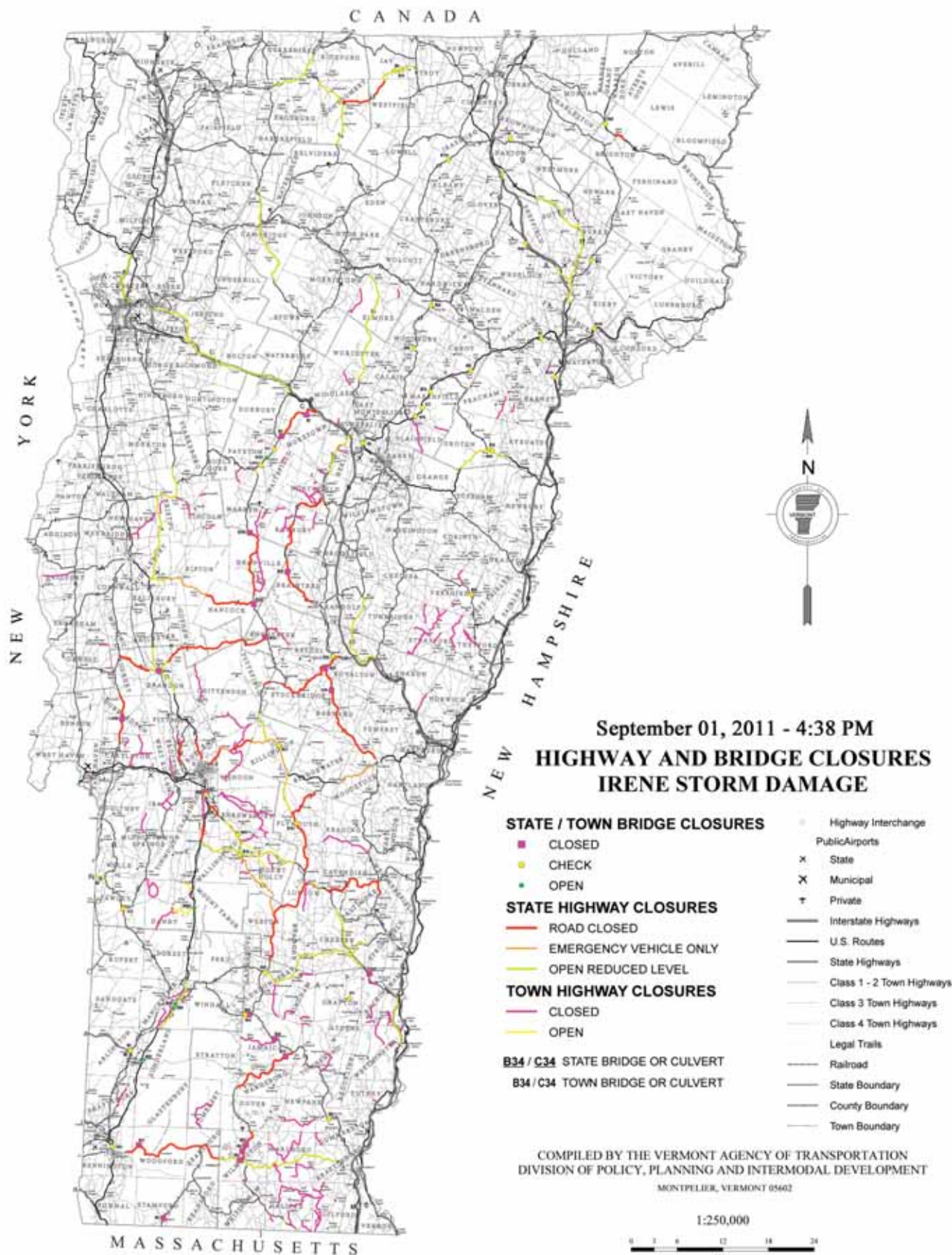




# **Irene Recovery Report**

## **A Stronger Future**

**January 2012**



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## **A Stronger Future**

**January 2012**





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*Neale Lunderville, Irene Recovery Officer*

January 3, 2012

The Honorable Peter Shumlin  
Governor of Vermont  
109 State Street, Pavilion  
Montpelier, VT 05609

Dear Governor Shumlin:

I am pleased to present the 120-day Irene Recovery Report. This report is the collective work of the Irene Recovery Coordination Team (IRCT), a cross-agency task force charged with ongoing statewide recovery initiatives. This team has worked in the "Vermont Strong" spirit to break down silos, find creative solutions and move quickly to assist affected individuals, families and communities.

This Irene Recovery Report is both a baseline of our Irene efforts to date and a blueprint for ongoing recovery actions, policy considerations and opportunities to rebuild Vermont Strong. The report addresses individuals and families rebuilding their lives and homes; Vermont's economic recovery; our communities; the unprecedented reconstruction of our roads and bridges; Vermont's unique focus of protecting our environment; and how we might better prepare for future disasters.

The report does not include the important considerations related to the Waterbury State Office Complex or Vermont Emergency Management's own after action report. These issues are outside the scope of the IRCT.

Vermont's recovery from Irene has been – and will continue to be – the work of many hands. We have been blessed with strong federal partners. Senator Leahy, Senator Sanders, and Congressman Welch have successfully fought for us in Washington, and their staffs have provided invaluable assistance for affected Vermonters here at home. FEMA and its sister federal agencies have been crucial to helping communities and families rebuild. We are especially grateful for the strong local leadership at those organizations.

Our collaboration with the Vermont League of Cities and Towns, Regional Planning Commissions, state legislators, town officials, community leaders and volunteers has been a critical component of our progress so far. We hope these robust partnerships will grow in the months and years ahead.

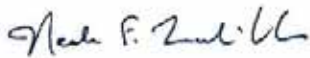


Agency leadership and state employees have worked tirelessly on behalf of survivors. Their commitment to the ongoing recovery is unmatched. Vermont can be very proud of its civil servants. Sue Minter is the perfect choice for the next Irene Recovery Officer; she is an extraordinary leader who has the intelligence, tenacity and experience to drive recovery forward.

Finally, your strong leadership in the wake of Irene has been a guiding star for Vermont. On behalf of the Irene Recovery Coordination Team and all Vermonters, thank you for your unwavering commitment to rebuilding our beloved state. I have been honored to serve Vermont on this important mission.

While this report marks a moment in time of our recovery from Irene, there is much work yet to be done. It will take years to recover from this storm, but I am confident that we come back smarter, safer and stronger than Irene found us. We will return Vermont Strong.

Sincerely,



Neale F. Lunderville  
Irene Recovery Officer



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# Executive Summary

On August 28, 2011, Vermont was forever changed. Tropical Storm Irene brought personal loss and public damage unlike anything we have experienced in more than a generation. The rising waters took lives and the incredible damage to homes, property, land and our natural environment is still difficult to comprehend.

But as quickly as the waters came, the cleanup began. In an awe-inspiring demonstration of what it truly means to be a Vermonter, we joined together helping our dear neighbors – and even perfect strangers – begin the long process to cleanup and rebuild. It started with emergency response to the many towns completely cut off and isolated. Crews assembled to shovel out basements, clean homes, and dry out precious belongings. The Vermont Agency of Transportation, local road, and utility crews – joined by citizen soldiers from Vermont and beyond – worked around the clock to reconnect communities by opening roads, repairing bridges and restoring power and phones.

In four months, our mighty State has come a long way towards rebuilding stronger, smarter and safer than before Irene found us. With an eye to the future, we will focus our efforts where they can continue to make the greatest impact on both our immediate recovery, as well as for the benefit of all Vermonters.

This report is both a baseline of our Irene efforts to date and a blueprint for ongoing recovery actions, policy considerations and opportunities to rebuild “Vermont Strong.” It is divided into six sections, each focused around a shared priority with key strategies to support that goal. This report is not an inclusive catalog of all ideas, opinions or actions possible for recovery, but rather a starting point for the ongoing collaboration on how best to recover in the wake of Irene.

This report outlines key recovery strategies that fall into three principal categories:

**ACTION:** These are recovery actions that are either currently underway or are planned in the coming months. These activities are essential to continuing the progress of Irene recovery, as well as to enhance policies and procedures that improve disaster response.

**POLICY:** From improving traveler information to flood-plain management, Irene raised policy questions both small and large. Where possible, this report offers a recommendation on resolving those questions. If the scope of the policy is too broad, this report offers either guidance or a framework to make decisions in collaboration with the Legislature and other partners.

**INNOVATION:** These recovery strategies are recommendations on how Vermont can take innovations discovered during Irene response and recovery, and apply them to the ongoing business of government.

**1 SUPPORT VERMONTERS AFFECTED BY IRENE:** Through a network of federal, state, local, non-profit, philanthropic and volunteer organizations, Vermont will provide ongoing assistance to individuals and families affected by Irene. Our efforts will assist Vermonters with both short and long-term challenges, helping them to rebuild their lives, and find safe and affordable homes.

- Action: Ensure a robust case-management network to aid survivors
- Action: Launch “Vermont Strong” fundraising and recovery effort
- Action: Continue crisis counseling in affected communities
- Action: Keep hunger awareness high
- Action: Provide a range of options to affected homeowners and renters
- Action: Encourage relocation of housing at risk to future flooding
- Action: Push National Flood Insurance Program to process remaining Irene claims
- Action: Develop a mechanism for collecting housing-needs data
- Policy: Irene increased need for affordable housing
- Policy: Review recovery issues unique to mobile homes

**2 ENSURE ECONOMIC RECOVERY AND RESILIENCY:** Our long-term recovery depends on the development of strong and robust local economies. Vermont will support businesses and farms with targeted assistance to aid recovery.

- Action: Support continuation of small business assistance through VEDA
- Innovation: Establish small business champions team
- Action: Expand small business toolbox and increase downtown tax credits
- Action: Implement aggressive post-Irene tourism marketing plan
- Action: Monitor farm viability for spring 2012 and possibly beyond
- Innovation: Expand interaction among agriculture partners
- Innovation: Utilize a case-management system at the Agency of Agriculture, Food and Markets
- Action: Enhance emergency preparedness and continuity of operations planning for businesses and farmers

**3 FOSTER COMMUNITY RECOVERY:** Vermont will champion local recovery by partnering with towns and cities in their ongoing efforts to rebuild infrastructure, restore services and assist residents and businesses.

- Action: Expand financial support to severely affected towns
- Action: Maximize Public Assistance 406 hazard mitigation funds
- Action: Prioritize disaster funding for community recovery
- Action: Continue State support for strong local recovery
- Action: Encourage community service to aid recovery
- Action: Memorialize Irene’s impact

**4 REBUILD OUR ROADS, BRIDGES AND RAILS:** Vermont will continue its strong work at a state and local level to rebuild and repair roads, bridges, culverts and rails damaged by Irene without losing sight of the overall infrastructure needs.

- Action: Continue repairs and monitor for new hazards
- Action: Enhance traveler-information services
- Action: Qualify State Snowmobile Trail System for FEMA PA
- Action: Expand inter-agency collaboration and coordination
- Innovation: Convene transportation innovation working group
- Innovation: Create rapid bridge deployment pilot
- Policy: Consider hazard mitigation and flood resiliency in project design and prioritization
- Policy: Sustain focus on statewide transportation program

**5 MANAGE ENVIRONMENTAL IMPACT:** Vermont will continue to honor its strong environmental ethic through the ongoing response and recovery. Our efforts will apply river and flood-plain management that protects our communities and our environment in partnership with local government, small businesses, farmers and property owners.

- Action: Continue ongoing remediation of debris and silt
- Action: Establish rapid response team to monitor river action
- Action: Maximize federal funds for channel stabilization and debris removal
- Action: Update bridge and culvert hydraulic design manuals in Vermont
- Innovation: Expand best practices education for river management
- Action: Coordinate efforts to protect farmland
- Action: Coordination with federal partners
- Policy: Review flood-plain management policies
- Policy: Evaluate hazardous waste storage
- Policy: Evaluate emergency response powers for environmental hazards

**6 PREPARE FOR FUTURE DISASTERS:** To better prepare for future disasters, Vermont will apply lessons learned from Irene for planning, emergency response and recovery.

- Action: Increase training on Incident Command System
- Action: Update State Emergency Operations Plan and State Hazard Mitigation plan
- Action: Encourage towns to update and/or develop emergency operations plans
- Action: Develop community communication system
- Action: Develop a goods-management strategy
- Action: Improve volunteer management capabilities
- Innovation: Establish Higher Education Volunteer Council

# Support Vermonters Affected by Irene

*Through a network of federal, state, local, non-profit, philanthropic and volunteer organizations, Vermont will provide ongoing assistance to individuals and families affected by Irene. Our efforts will assist Vermonters with both short and long-term challenges, helping them to rebuild their lives, and find safe and affordable homes.*



David and Kathleen Leitch in front of their new house.  
Photo by Irene Recovery Office.

Nothing is more important to Vermont than the people who call it home. In the immediate response to the storm, a network of groups sprang into action to assist Vermonters affected by Irene. From local volunteers working door-to-door in a neighborhood, to the immediate on-the-ground action of the Green Mountain Boys, to the massive response of the Federal Emergency Management Agency (FEMA), Vermonters worked together to overcome the storm's immediate challenges and locate each and every person to offer help.

As FEMA and Vermont state agencies began assessing the needs of our citizens, the American Red Cross responded with 13 temporary shelters and food banks to supplement the outstanding efforts by communities to take care of their own. The Red Cross also managed feeding programs for not only disaster survivors, but also emergency workers.

## Home for the Holidays

Living beside a tributary of the Black River, Dave and Kathleen Leitch found themselves in the wrong spot when Tropical Storm Irene hit. Rushing water tore through their home, destroying almost everything, including Dave's workshop where he made his living as a woodworker and mechanic.

When the water receded, the house that had been in Kathleen's family since 1933 – the building in which the couple's daughter was born – was unsalvageable. FEMA quickly cut the couple a check for \$30,200, the maximum allowed, and friends loaned them a camper.

A carpenter by trade, Dave immediately went to work. Once everything that was salvageable was removed, he demolished the building. With the camper parked in the side yard to provide his family temporary shelter, he called everyone he knew that had construction skills and started to rebuild. The goal was to have a new home habitable by Christmas.

"I had to call in a lot of favors," Dave said. "I have been in construction a long time, and I know a lot of people. I will have to return the favor someday, but that is what it is all about."

Working days, nights and weekends, Dave and a host of volunteers achieved the couple's goal. On the same land where their previous home sat – but in a location above Irene's flood stage – a new, two-story home now rests. Only this time, a three-car garage makes up the entire first floor, with the dwelling section safely perched above.

"The new building is two feet above Irene's water level, so it will take a lot of water to get in the garage," Dave said.

To fund the project, the couple borrowed from Kathleen's retirement account. Even though Dave – with help from friends and volunteers – was able to do much of the physical labor, materials were still costly.

"We have been losing money every day in the stock market with our 401Ks... so instead of watching the money wither away, we took it out and put it to use," Dave said. "We took \$40,000 out of savings, but we will have a house that is probably worth \$100,000. So that is pretty good."

While the Leitch's story is one of success, their perseverance comes with a cost. Since the storm destroyed Dave's workshop, he is not currently working. Instead of immediately looking for employment, he turned all his time and attention to rebuilding the family's home, which was the couple's first priority.

"I don't have time for anything else, but my wife has been working," Dave said. "I will go back to work once we are in, the house is livable and I don't have to be at it every day."

While the couple was able to move into their new home by Christmas, the work is not complete. There was not enough time to install siding, so the house will winter covered in building paper. Various finishing tasks on the inside also must be completed. And now that they achieved their goal and have a moment to breathe, the couple also plans to connect with their region's Long Term Recovery Committee to explore ways the committee may be able to provide additional assistance.

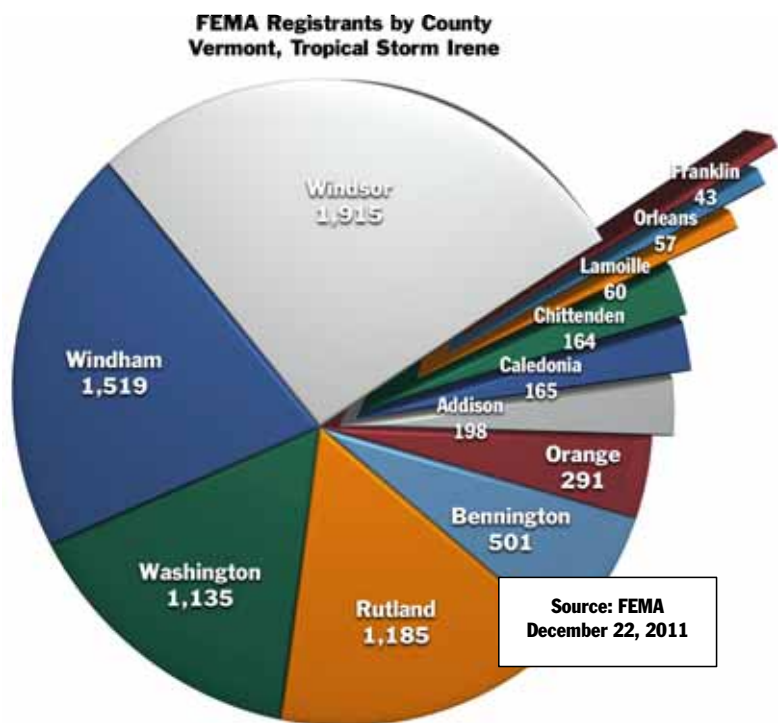
But even when Dave no longer needs to focus all his attention on rebuilding, it still will take time for him to piece his workshop back together. All his equipment was lost in the flood, which means he now has a brand new workspace, but no tools.

"I still have to outfit the workshop because there is nothing in there," Dave said. "I will be looking to take a job to make some money" so that I can purchase tools and equipment. "It will be a while before life is back to normal," he said. §

Food was distributed through a combination of fixed sites and mobile units. It is estimated that over 16,000 meals were provided to Vermonters and those responding to Irene. Feeding operations were supported by the Vermont Food Bank and various volunteer organizations.

Although communities and aid organizations provided the first line of response, FEMA was quick to follow with relief assistance for affected Vermonters through the agency's Individual Assistance (IA) program. Immediately following the storm, FEMA and its state partners encouraged Vermonters to register for IA and to apply for housing assistance from the Small Business Administration. This registration gave no guarantee of benefit, but it was a necessary step to qualify for federal assistance.

Over 7,200 Vermonters registered with FEMA for assistance, and of those registered over 4,300 Vermonters received a benefit. FEMA estimated that more than 3,535 homes suffered some damage, and of those approximately 1,400 households were displaced either temporarily





**Housing Assistance Provided to Individuals by FEMA  
Vermont, Tropical Storm Irene**

<b>FEMA Individual Housing Assistance</b>	<b>Amount</b>
<b>Number of FEMA Registrants</b>	<b>7,233</b>
<b>Number of Payments Dispersed for Housing Assistance</b>	<b>4,804</b>
<b>Average Housing Assistance Award Per Recipient Assisted</b>	<b>\$5,623</b>
<b>Home Repair Cumulative Statewide Total</b>	<b>\$16,044,637</b>
<b>Rental Assistance Cumulative Statewide Total</b>	<b>\$2,653,857</b>
<b>Other Need Assistance Cumulative Statewide Total</b>	<b>\$1,554,132</b>
<b>Total FEMA Individual Housing Assistance</b>	<b>\$20,252,626</b>

Please note that all of FEMA's data is cumulative up to the date upon which the data was provided. In other words this is a "snap-shot" of this particular point in time.

**Source: FEMA  
December 22, 2011**

or permanently. Of these impacted homes, 681 have damages exceeding \$10,000.

FEMA awards are made once insurance payments are determined and are only intended to ensure safe, sanitary and secure housing. FEMA grants are capped at \$30,200 and the average provided to Irene survivors for housing assistance has been \$5,623.

## **Housing**

The immediate goal of the housing response was to ensure that every survivor had access to safe and warm shelter before winter arrived. On September 6th, the Vermont Agency of Commerce and Community Development (ACCD) activated the Irene Housing Task Force through its Department of Economic, Housing and Community Development. Comprising 25 local, state, federal and non-profit housing and service agencies, the task force served to collect critical housing-needs information and disseminate resource information and guidance to Vermonters in need. While FEMA has the primary responsibility for meeting disaster-related housing needs, the task force helped locate

available rental housing, identify gaps in assistance, assess the need for temporary housing units, coordinate the response of housing agencies and advise FEMA's Housing Team on the needs of Vermonters.

While individuals reported their needs to 211, ACCD developed a call-center for business and rental-housing owners, and used the data gathered to provide preliminary-damage assessments to Vermont Emergency Management (VEM). ACCD responded immediately, and continues both to provide information to and collect needs data from its existing network and partners such as Regional Development Corporations, Regional Planning Commissions, local housing non-profits, downtown organizations, tourism industry representatives, and chambers of commerce.

Vermont's service and housing-delivery network played a key role in the response. Shortly after the storm, the Irene Housing Task Force identified a need to provide case management to help survivors access the resources available to them. The Agency of Human Services (AHS), through its Field Service Directors and various Community Action Agencies (CAAs), reached out to Vermonters to determine their immediate needs. This work – which included providing assistance, making service referrals and encouraging survivors to register with FEMA – was done in coordination with both FEMA and the Red Cross. Homeownership Centers were trained by the Small Business Association to help survivors not only apply for housing assistance, but also appeal determinations.

Mobile homes and their parks were severely impacted by Tropical Storm Irene. Sixteen mobile parks and more than 500 mobile homes – both in parks and on private land – were either damaged or destroyed. ACCD in collaboration with the Mobile Home Project of the Champlain Valley Office of Economic Opportunity is working closely with owners and residents to meet the particular recovery challenges they face.

One such hurdle is the obligation of mobile home owners to pay for the disposal of their destroyed homes. To address this need, Lt. Governor Phil Scott created the Mobile Home Removal Program in coordination with ACCD, the Mobile Home Project, the Vermont chapter of Associated General Contractors, Vermont Long-Term Disaster Recovery Group, Inc. (VLTDRG) and the Vermont Community Foundation (VCF).

The program paid for the removal of destroyed homes in parks across the state – sav-

ing residents disposal costs of as much as \$4,500 – and is now reimbursing owners who disposed of mobile homes before the program was established. In total, the program removed 68 mobile homes from six mobile home parks between October 31st and December 8th, disposing of 946 tons of waste with 105 tons of salvageable metal removed.

It's important to note that this was not a state program; with the exception of state employee time to help coordination, all funding came from private donations. A total of

**FEMA Individual Assistance  
Vermont, Tropical Storm Irene  
Source: FEMA December 20, 2011**

County	Total Registrants	Max Grants	Above \$10,000 Grant	Home Repair Assistance	Rental Assistance	Other Needs Assistance
Addison	198	1	13	\$427,979	\$46,702	\$15,621
Bennington	501	3	23	\$820,810	\$108,053	\$63,723
Calendonia	165	0	4	\$193,110	\$40,506	\$21,586
Chittenden	164	1	9	\$265,585	\$62,304	\$14,908
Franklin	43	0	2	\$50,365	\$13,460	\$1,546
Lamoille	60	0	1	\$55,593	\$6,676	\$3,305
Orange	291	5	24	\$739,795	\$90,039	\$24,694
Orleans	57	0	1	\$42,741	\$4,598	\$3,045
Rutland	1,185	8	49	\$1,584,779	\$303,317	\$155,921
Washington	1,135	33	201	\$4,692,119	\$778,770	\$671,082
Windham	1,519	24	68	\$2,005,163	\$417,759	\$194,840
Windsor	1,915	59	196	\$5,166,598	\$781,673	\$383,861
Statewide	7,233	134	591	\$16,044,637	\$2,653,857	\$1,544,132

**Total Registrants: 7,233 people registered with FEMA. Of those who registered FEMA disbursed 4,804 payments for housing assistance.**

**Max Grants: the number of people who received FEMA's maximum award of \$30,200.**

**Other Needs Assistance includes the following: Medical, dental, funeral, moving & storage, transportation and personal property.**

**Above \$10,000: number of people who were awarded \$10,000 or more from FEMA.**

\$300,000 came from more than two-dozen donors. This is a prime example of how the public, private, philanthropic and nonprofit sectors worked together to swiftly respond to Irene and put Vermont on track to a full recovery.

### Volunteer Response

Before the rain stopped falling, Vermonters in droves were already reaching out to their neighbors. The selflessness that Vermonters showed in this time of crisis is unmatched. All around the state, affiliated groups and individual citizens stepped up to organize volunteers, coordinate resources and identify work projects to help those most in need.

A centerpiece of the volunteer response was the formation of community groups to aid those affected by the storm. These groups began the inventory of services needed as well as the opportunities to gather donated items and labor. Vermont welcomed the strong support of Volunteer Organizations



looking to assist. This independent blog-style website, designed and run by Vermonter Sarah Waterman, was a virtual bulletin board for individuals and communities to post their needs for volunteers. Its companion site, vtexchange.org, created by Vermonter Seth Beck, allowed folks to post and exchange needed hard goods. Media coverage of these online resources helped them become important tools to facilitate neighbor helping neighbor.

As a response to the Governor's call for action, the inaugural Vermont Clean Up Day was held on October 22, 2011. This statewide day of service provided a boost in morale for families and communities that were devastated by Irene and also allowed many volunteers in the state to see firsthand the devastation caused by the storm. Clean Up Day centered around community driven projects that were listed on a central website for affiliated and unaffiliated volunteers at vtcleanup.org. As a lasting legacy of Irene, Clean Up Day will become an annual event held in autumn.



A destroyed home in Bethel.  
Photo by VAOT.

Active in Disaster (VOAD), which organizes affiliated volunteer groups that come with specialized training to help respond to a variety of disaster-related situations.

In the days after Irene, vtresponse.com sprang up as the go-to resource for volunteers

### Vermont's Human Services Network

The Agency of Human Services is the primary state agency designated to coordinate and manage assistance in support of state and local efforts to meet the mass care, emergency assistance, housing, and human-service needs of disaster survivors. In the aftermath of Irene, AHS relied on Vermont's strong network of public and private partners to help survivors and protect vulnerable populations. Within AHS, each department played a key leadership role to organize and coordinate both response and relief efforts.

The Vermont Department of Health (VDH) was a critical player in the days and weeks after Irene. The department monitored the status of all Vermont hospitals, and supported a number of critical response activities including the relocation of two residential care fa-



cilities and the Vermont State Hospital. VDH worked closely with town health officers during response-and-recovery efforts to provide public health services, including the distribution of 2,986 water test kits to both private and public water systems, over 50,000 N-95 respirators and over 20,000 gloves to protect Vermonters during cleanup.

The Department of Disabilities, Aging & Independent Living (DAIL) established a Disaster Recovery Team that met daily to address the safety and needs of both its core populations and community partners. DAIL worked closely with the Area Agencies on Aging to coordinate case-management support for elderly and disabled Vermonters that were displaced because of flooding.

The Child Development Division of the Department for Children and Families (DCF) provided assistance with issues concerning child-care programs. The division was on the ground in the days following Irene to connect with programs and offer assistance. In several cases, the division issued variances and expedited requests to move to alternate facilities so the continuation of child-care programs could be maintained.

In addition to providing housing assistance, AHS field service directors played a key role assisting local communities, state officials and FEMA, especially in the area of long-term recovery. On an ongoing basis, these directors are the primary point of contact for local recovery committees when they have human-service-related issues associated with such things as aging and mental health. The directors help individuals and families access services at both the state and federal level.

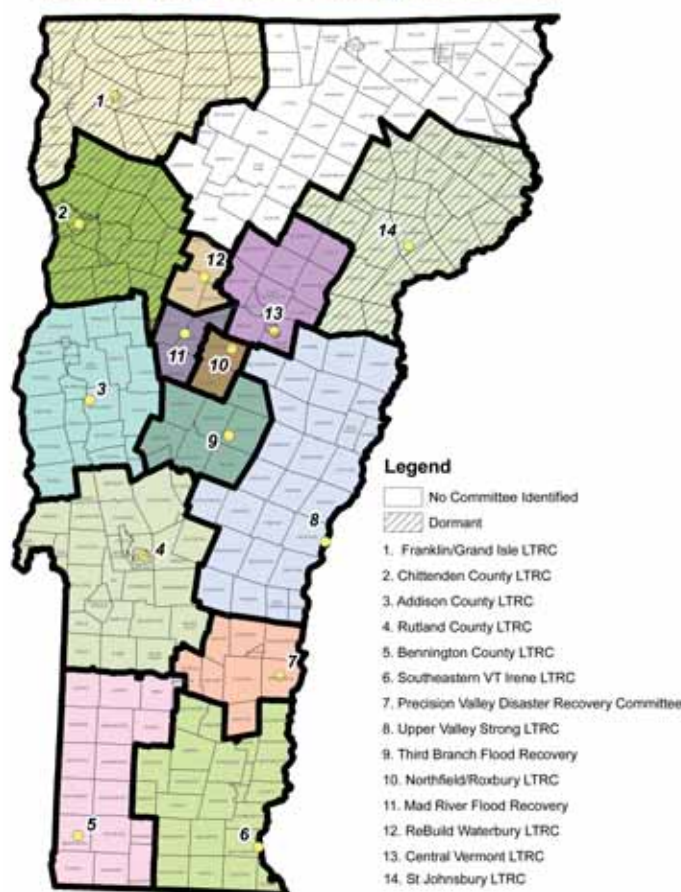
## Long Term Recovery

While Vermont met the immediate goal of ensuring access to shelter, some Vermonters affected by Irene will need additional support to rebuild their lives and their homes. To aid all individuals and families, 14 Long Term Re-

covery Committees (LTRCs) have organized throughout Vermont following recent natural disasters, including the spring flooding and Tropical Storm Irene. LTRCs include local voluntary agencies, community-based organizations, local government, and members of the private sector. LTRCs maintain ongoing communication with the Vermont Long-Term Disaster Recovery Group (VLTD RG) to coordinate efforts and resources for Vermonters in need.

The VLTD RG is the administrator of the Vermont Disaster Relief Fund (VDRF), which

**Vermont Long-Term Recovery Committees**



was created to support Vermont's long-term-recovery process by providing relief to those individuals and families who have unmet disaster-caused needs. It is the intent of the VDRF to use these funds after an individual or family has exhausted personal insurance,

FEMA assistance, local long-term recovery funds and other grant programs. Personal assets and Small Business Administration (SBA)

eligibility also will be reviewed in determining a grant request.

FEMA Individual Assistance is often the first and most substantial benefit to Irene survivors. FEMA funding is designed to provide a safe place to live and basic needs to disaster victims, but it is clear that FEMA IA alone is not enough to bring many Vermonters back from Irene. After FEMA funding has been awarded, LTRCs are the primary conduit for long-term aid to fill the gaps for

our most needy survivors.

VDRF has formed an allocations committee that will be responsible for the disbursement of money. In most cases, funds will be awarded to service providers or to vendors directly on behalf of the survivor. When a LTRC has an unmet needs committee or allocations committee that hears a case from the case manager, the Vermont Long-Term Recovery Group will have a member present to hear the need and make appropriate decisions regarding the VDRF portion of the award.

#### **ACTION: Ensure a Robust Case Management Network to Aid Survivors**

Disaster case managers are the critical link to Vermonters still in need. Case managers will carefully coordinate unmet needs across various sources to maximize assistance to Vermonters, while avoiding duplication of

benefits. Professional case managers can assist those with unmet needs by helping them to exhaust personal insurance as well as obtain Home Ownership Center revolving loan funds and financial counseling. Case managers also can help them access federal and state grants, local long-term recovery funds and other community resources.

AHS supported this effort by supplying Community Action Agencies with initial funding to hire case managers for three months. Case managers will work directly with the LTRCs. As needs are assessed, staffing levels will be adjusted according to demand.

The Red Cross continues to participate in long-term recovery planning and recently provided Coordinated Assistance Network (CAN) training to case managers and others who are affiliated with our LTRCs around the state. Four training sessions were held, and 34 individuals were trained. In addition, steps were taken toward lining up an in-state CAN liaison to work with the LTRCs for the long haul.

Looking past the next three months, AHS applied to FEMA's Disaster Case Management Program for federal funds that would support an additional 10 disaster case managers for up to two years. AHS hopes to soon learn if this application was successful.

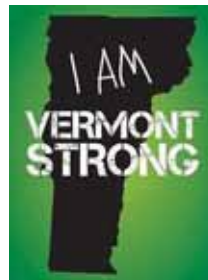
#### **ACTION: Launch "Vermont Strong" Fundraising and Recovery Effort**

"I Am Vermont Strong" became the rallying cry for individuals and communities statewide in the weeks following Tropical Storm Irene. Two native Vermonters from Rutland, Lyz Tomsuden and Eric Mallete, created the motto and accompanying logo. Outside of our state, this "call to action" logo served to build solidarity and support behind Vermont's swift recovery.

We will leverage the Vermont Strong spirit



A house in Jamaica.  
Photo by VAOT.



of pride with the launch of a commemorative front license plate in January 2012. The plate will cost \$25.00 and net proceeds from the sale will be directed to the VDRF and the Vermont Foodbank to assist Vermonters who still need help.

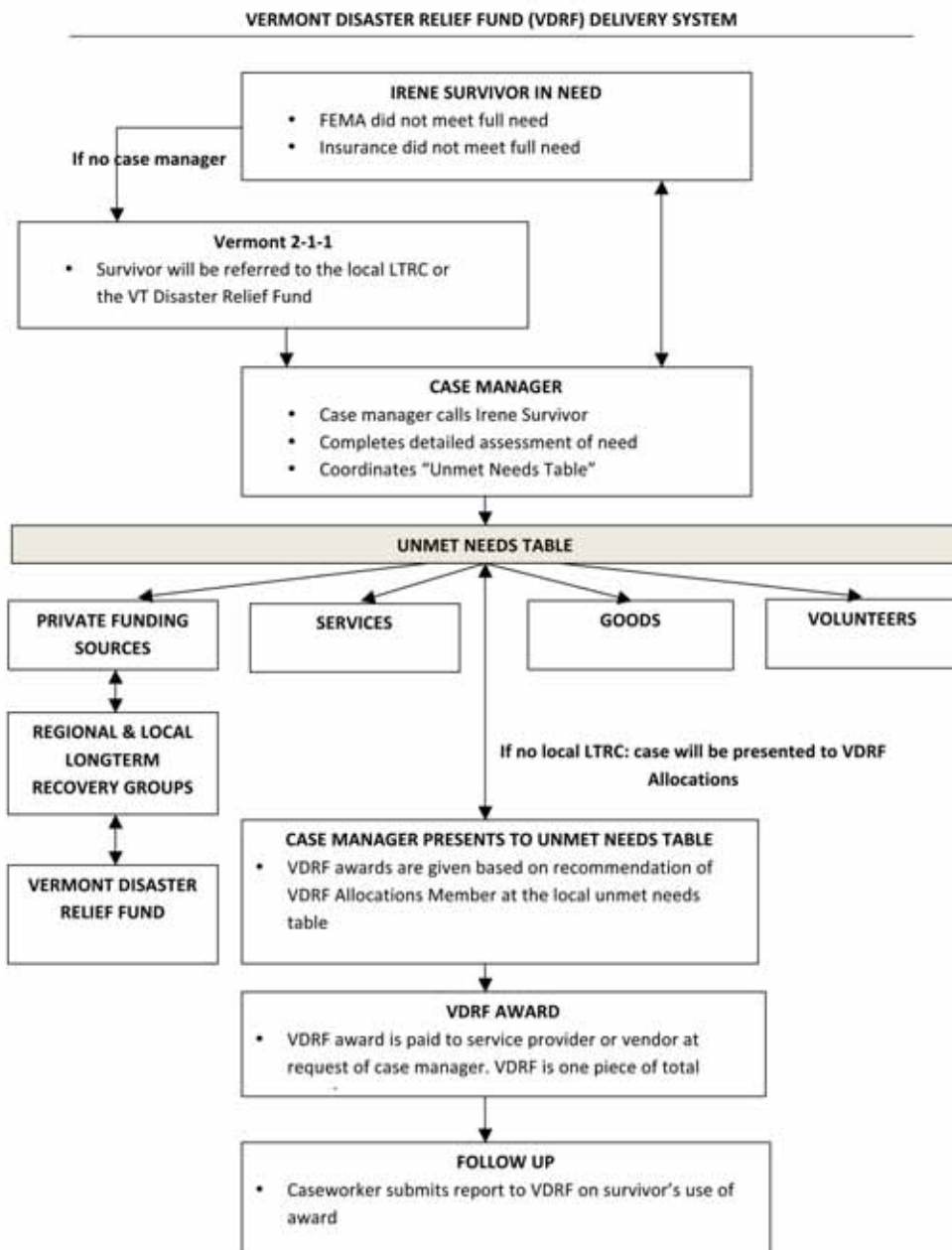
A website – vtstrong.vermont.gov – has been established as an informational clearinghouse and resource to coordinate the statewide recovery effort. The website will facilitate communication between all local, state and federal recovery partners, and will encourage cooperation and engage Vermonters, Vermont businesses and local communities in recovery activities as well as Vermont Strong promotions.

### ACTION:Continue Crisis Counseling in Affected Communities

While we've made great progress on Vermont's physical recovery, the psychological healing of affected Vermonters will take time. Individuals and families are still coming to terms with the upheaval caused by Irene. And as events like spring flooding or the anniversary of Irene's impact occur, individuals may re-experience some of the symptoms commonly associated with significant traumatic events.

In the weeks after Irene, FEMA awarded a grant to the Department of Mental Health to provide short-term and immediate crisis

counseling assistance and training. The program is called Starting Over Strong (SOS) and is being administered through Washington County Mental Health Services. SOS works directly in the hardest hit communities to promote individual and family re-



covery. Services will be available through August 2012.

Through its initial observations, SOS found Vermonters are reporting a wide array



of emotional, physical and cognitive responses. These responses include: feeling sad and tearful, anxious, exhausted, and having difficulty concentrating and making decisions. It should be noted that these responses were still being observed and reported more than three months after Irene.



Destroyed home in South Newfane.  
Photo by VAOT.

#### **ACTION:Keep Hunger Awareness High**

When families are struggling to make ends meet, food is often the first necessity to be scaled back. Hunger issues persist in our state, especially among our youngest and oldest Vermonters. We must pay special attention this year to families affected by Irene who might be living precariously close to the edge.

Vermont's food shelves will provide need-blind services to Vermonters affected by Irene through February. Over 60 food shelves will provide free, quality food without income guidelines for the next two months. This food has been made available to Vermont through the USDA, with the help of DCF and the Vermont Foodbank.

#### **ACTION:Provide a Range of Options to Affected Homeowners and Renters**

FEMA benefits and SBA loans will not be sufficient to meet the ongoing needs of many displaced households. Long-term goals for

housing recovery include stabilizing impacted households, relocating homes away from vulnerable areas, preserving existing affordable housing, improving private rental stock, developing new housing for low and moderate-income Vermonters in impacted areas, and promoting total affordability that takes into consideration energy use and transportation costs in addition to traditional housing expenses.

Homeownership Centers will provide financial counseling, consumer protection guidance, assistance with FEMA and SBA appeals, and help negotiating with lenders and insurers. These services, in addition to grants and loans, will improve long-term success.

Within days of the storm, ACCD met with senior officials at the U.S. Department of Housing and Urban Development (HUD) to request help in meeting the housing needs of Vermonters. Due to this outreach and the ongoing efforts on the part of Governor Shumlin and the Congressional Delegation led by Senator Leahy, Vermont may receive additional Community Development Block Grant funding.

These funds will be directed to help the housing needs of individuals, long-term recovery of businesses and the redevelopment of communities.

In coordination with our public and private housing partners as well as Vermont's philanthropic community, we will continue to work to leverage and secure additional resources to meet Vermonters' evolving housing needs.

Other important actions to assist individuals and families with their recovery include:

- Consideration of the recommendations from Senate President Pro Tempore John Campbell's Post Irene Property Task Force to address legal and property issues confronting survivors;
- Implementation of recommendations of the Governor's Summit on Housing the Homeless; and

- Funding the state general assistance program to ensure that Vermonters with the most acute needs have the necessary short-term support to secure housing.

#### **ACTION: Encourage Relocation of Housing At Risk of Future Flooding**

Many Irene-destroyed homes are in areas vulnerable to future flooding. Relocation and mitigation must be considered. In the near term, maximizing opportunities to “buyout” destroyed homes through FEMA’s Hazard Mitigation Grant Program (HMGP) can provide needed assistance to some survivors. In addition, these buyouts allow communities to lower the potential for future flood damage through removing structures at risk while restoring important flood-plain functions. This funding is awarded to towns for the procurement of flood-prone structures, including private homes, within their jurisdiction. Outreach to towns, mobile-home parks and residential property owners is underway.

Buyout assistance to homeowners will depend on the capacity and willingness of municipalities to apply to the HMGP. Efforts are underway to identify funding for the required 25-percent local match including Community Development Block Grant funds through ACCD, conservation funds through the Vermont Housing and Conservation Board (VHCB) and private foundations. Technical assistance will be provided to towns through VEM, FEMA, Regional Planning Commissions and watershed organizations, and to homeowners through the Homeownership Centers.

ACCD will work with its housing partners and communities in the months and years ahead to identify opportunities to relocate housing, including mobile-home parks, out of vulnerable areas. To ensure the success of these efforts, ACCD recommends the passage of H.59, which would prohibit discrimination against projects containing affordable units in land-use or permitting decisions.

#### **ACTION: Push National Flood Insurance Program to Process Remaining Irene Claims**

Many Vermonters affected by Irene have encountered significant delays while waiting for insurance settlements. The National Flood Insurance Program (NFIP) has been slow to process claims due to the large number of disasters this year. This slow down has put many survivors at a disadvantage since FEMA will not provide funding assistance through its IA program until insurance claims have been settled. The Vermont Banking, Insurance, Securities and Health Care Administration (BISHCA) continues to provide individual assistance to Vermonters with both NFIP and private insurers, while the administration and Congressional Delegation have petitioned NFIP to speed up claims processing.



Debris pile in front of Cavendish Mills.  
Photo by VAOT.

#### **ACTION: Develop a Mechanism for Collecting Housing Needs Data**

A challenge identified in the immediate storm aftermath was the lack of a centralized system for collecting housing-needs data. The Irene Housing Task Force was forced to rely upon conflicting and incomplete reports from FEMA, local volunteer groups and service organizations. In preparing for future disasters, it is essential to

add housing information to the data collected and compiled at the state level to determine needs and response activities.

#### **POLICY:Irene Increased Need for Affordable Housing**

The need for affordable housing is greater than ever following Tropical Storm Irene. Hundreds of affordable homes were lost, and state and federal resources to replenish the stock are limited. Through Community Recovery Partnership meetings, the State is identifying needs and possibilities for developing affordable housing for low and moderate-income Vermonters in impacted areas including mobile-home parks. Factors to be considered include flood resiliency and total affordability, including transportation and energy costs.

Critical to meeting this challenge will be the ability to prioritize housing recovery and redevelopment projects with existing funds. The State must also work with the Congressional Delegation in support of federal housing pro-

munity development tool will be increasingly important, as will be collaboration with private sector developers. Equally important will be the preservation of existing affordable housing to avoid the loss of additional units.

#### **POLICY:Review Recovery Issues Unique to Mobile Homes**

As noted previously, mobile homes experienced a significant share of the damage caused by Irene. While mobile homes provide an important affordable ownership option to Vermonters, their value, location and low-resistance to water damage can create additional obstacles to recovery following a disaster. Few Vermonters have significant discretionary resources with which to secure replacement housing.

In mobile-home parks, split ownership of the land and home creates another complicating factor. Securing financing to purchase a new mobile home is too often out of reach. While continued aid from Homeownership Centers and foundation resources will flow to mobile homeowners to secure replacement housing and defray the cost of removing destroyed mobile homes, these are short-term stopgaps for the bigger and more complex issues.

As we examine policy around mobile home financing, location, and ownership, the University of Vermont's study on improving disaster resiliency of homes in mobile-home parks is underway and will likely provide recommendations worthy of consideration. Supporting the enhancement of the First Stop Grant funding for Mobile Home Projects at the Champlain Valley Office of Economic Opportunity would be a benefit for addressing the needs of this community.

Also, ACCD recommends addressing the delays in FEMA's appeal process due to lack of condemnation. Codifying a process for condemnation should be considered by reviewing state and local authority to condemn homes or declare them uninhabitable. The



A mobile home in Danby.  
Photo by VAOT.

grams, maintain its commitment to support housing partners like VHCB, leverage foundation and private resources and collaborate with the private sector housing providers. Scarcity of resources means that leveraging housing creation as an economic and com-



State should also identify ways to provide technical assistance to town health officers. Technical assistance would be very helpful to speed review of mobile-home appeals during a disaster.

## Volunteers on the Front Line

*As chairman of the Vermont chapter of Volunteer Organizations Active in Disaster, Bill Elwell works regularly with both the Federal Emergency Management Agency and Vermont Emergency Management as they run local drills. So when Tropical Storm Irene hit the Green Mountain State, Elwell was ready to activate VOAD's vast network.*

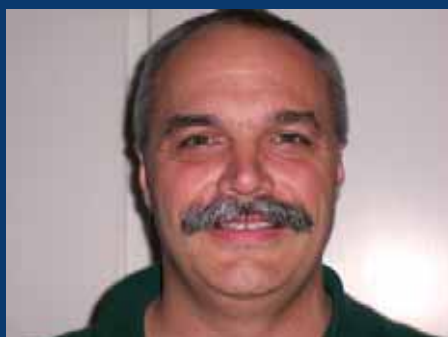
*Working with highly recognizable groups such as the American Red Cross, the Salvation Army, and the United Way, as well as college groups and faith-based associations like the Southern Baptists, United Methodists and others, Elwell quickly connected hundreds of volunteers from all around the country who were willing to help Vermonters in need.*

*"I spent a lot of time coordinating national groups," said Elwell, a Bristol resident and United Methodist pastor of two local churches. "Faith-based groups bring in a large amount of resources."*

*Working with both state agencies and local communities, Elwell has secured rebuilding offers from volunteer groups to help families who lost their homes. In as little as a week's time, volunteers can erect the frame – including windows and roof shingles – of a new home, Elwell said.*

*"By the time they are finished, all you have is the inside work to do," Elwell said.*

*With the initial cleanup now complete, Elwell is*



**Bill Elwell, Chairman of Vermont VOAD.**  
Photo by B. Elwell.

*focused on aiding individuals and communities with long-term recovery. Aside from providing aid to rebuild homes, VOAD organizations also provide case managers and leadership expertise that can help communities both find and allocate funding.*

*"More of these groups are involved in long-term recovery than they are in short-term response," Elwell said. "We are in communication with people who want to come in during the spring and summer to help communities... Many can provide volunteer case managers that work hand-in-hand with survivors to help them move forward." §*

# Ensure Economic Recovery and Resiliency

*Our long-term recovery depends on the development of strong and robust local economies. Vermont will support businesses and farms with targeted assistance to aid recovery.*



Lisa Sullivan owner of Bartleby's Books.  
Photo by Irene Recovery Office.

The economic effects on Vermont from Tropical Storm Irene are still being calculated and the full impact may never be known. But even without final numbers, it is clear that the storm's overall effects are significant and unfavorable. The storm destroyed a great deal of personal wealth and public assets, and changed many lives forever. Prior to Irene, the current nationwide recession and tentative local economic conditions had already deeply affected Vermont's economy, with retail, tourism, agriculture and the housing sector all being targets of the downturn.

## Fall Foliage Tourism

While Irene's devastation alone was a major economic blow to an already fragile state economy, the storm's timing created additional problems. The storm arrived on August 28, just a couple of short weeks before Vermont's fall foliage season, one of the state's

## One Chapter at a Time

When floodwaters from Tropical Storm Irene inundated her bookstore in downtown Wilmington, Lisa Sullivan, owner of Bartleby's Books, was better prepared than most to deal with the aftermath. Just five months earlier, a six-alarm fire broke out in the building that housed her Brattleboro store. The ensuing water damage destroyed her entire inventory.

This previous bout with water provided Sullivan with knowledge she needed to act quickly.

"We were very prepared," Sullivan said. "There was no 'Oh woe is me.' We acted very quickly... We immediately cut down the dry-wall, and pulled the insulation out to dry the building."

Even while volunteers were helping to remove the mud and soggy books from her shelves, Sullivan was working to reopen. Contacting both her insurance company and the Vermont Economic Development Authority, she secured a quarter of a million dollars – \$150,000 from insurance and \$100,000 in a VEDA loan – which allowed her to rebuild.

"The VEDA loan process was incredible," Sullivan said. "They turned our loan around in a couple of days and we had our money very quickly... That loan got us to the place where we could manage things financially."

Bartleby's, which Sullivan has owned and operated for the past seven years, reopened just after Thanksgiving. The bookstore stands as one of Wilmington's brightest success stories. But not all in the historic village have fared so well.

Irene damaged more than 100 businesses in the heart of downtown Wilmington and nearby Dover, causing an estimated \$8.5 million in damages. To help the local business



community get back on its feet, the select boards of both towns teamed up with the Brattleboro Development Credit Corporation to fund and hire two emergency business recovery officers to work with local entrepreneurs and provide them recovery assistance.

The two officers, who have expertise in either financial management or banking, quickly met with every business owner to understand their unique circumstances. They then helped them acquire permits, secure loans and procure any other kind of help they needed.

“A lot of people were shell shocked initially, and we were able to help them,” said Bruce Mullen, one of the two business recovery officers. “As people thought about things more and got encouragement from not only us but their community, they wanted to come back.”

By year’s end, local business owners received a combination of VEDA and Small Business Association loans totaling nearly \$3 million, Mullen said. Long term, FEMA designated Wilmington as one of two communities to receive extended community support, and will help the town es-

tablish a long-term recovery plan.

“With the exception of 10-12 businesses, everyone has either reopened or is planning to reopen,” Mullen said. “It is actually very encouraging.”

While some businesses have bounced back quickly, a full economic recovery will take time. Some buildings were completely destroyed, while others received severe damage and remain unoccupied. Owners of these properties have tough decisions to make, and several are unsure about renovating or rebuilding, Mullen said.

But should they decide to rebuild, the tools to help them, which include significant community support, appear to be in place.

“A number of places have reopened, I’d say about half or a little less than half – so it is coming,” Sullivan said. “But now we are entering the long-haul phase, which is a far less satisfying and sexy phase” than the initial recovery. “It is going to take months and potentially years before we get everything back in place and things are back to the point where we are really comfortable. §

biggest revenue-generating travel seasons. Just as leaves were starting to turn, major roadways were impassible and many popular destinations were unreachable.

Once the State’s emergency response was underway and everyone knew that food, water and housing were made available in the hardest hit areas, many merchants tied to the tourism industry who were open for business and largely unaffected by the storm began reporting significant cancelations of room reservations during what is typically an extremely busy season. A lack of placing “heads in beds” would quickly lead to empty restaurant tables and a lack of retail consumers.

The Vermont Agency of Transportation responded by making repairs to critical east-west tourism routes such as Route 4, Route 9 and Route 103 a priority, while the State’s De-

partment of Tourism and Marketing, along with its local partners, quickly launched an aggressive multi-media campaign designed to inform the traveling public of where and how to travel throughout Vermont. This campaign included:

- Public service announcements;
- On-line advertising;
- Google text ads;
- Advertising in neighboring states;
- The Vermont Foliage Force: a collaborative effort that allowed Vermonters and visitors to share their photos of spectacular fall foliage;
- Social media – including a Share Vermont e-postcard that could be sent to family and friends to encourage them to visit; and
- Fall media campaign – Pandora, web, TV and radio presence.

A recent analysis of tax revenues for the period following Irene suggest a relatively successful foliage season overall, but it should be noted that many businesses were significantly affected and revenues also reflect the impact of Irene-response workers using dining and lodging businesses.

### Immediate Small Business Relief

Many of the businesses impacted by Irene were small businesses. The Agency of Commerce and Community Development (ACCD) worked with various chambers of commerce, regional development corporations, Small Business Development Centers and other organizations to encourage businesses to register for FEMA assistance and apply for loans. The agency also worked with the Vermont Congressional Delegation to provide a tailored Small Business Administration (SBA) approach for Vermont. The SBA responded, and played a significant role in the recovery of Vermont's business community. At the time of this report, SBA approved more than \$28.5 million for Vermont, approx-

imately \$11.6 million of which was loaned to businesses.

Knowing that businesses needed immediate help, VEDA also responded with a loan program. To date, VEDA has processed nearly 260 loans totaling just under \$15 million for businesses. For agriculture-related businesses, 37 applications have been processed, totaling nearly \$1.3 million. The average VEDA business loan is approximately \$58,000, while the average agricultural loan is \$28,000. Feedback on the VEDA loan program has been extremely positive, with many recipients commenting on the easy access to funds and quick turnaround, especially as compared to SBA loans.

Working with Vermont Businesses for Social Responsibility (VBSR), the Vermont Chamber of Commerce, local chambers and others, ACCD sent out a survey to gauge the scale of Irene's impact on small businesses and to determine their specific need. The survey will be available early in January 2012, and ACCD will work with its economic-development partners to address the identified needs.

SBA Home and Business Loans Vermont, Tropical Storm Irene									
County	SBA Home Loan Applications				SBA Business Loan Applications				Total Dollar Amount Per County (Both Home + Business Loans)
	Number of Applications Issued	Number of Applications Submitted	Number of Applications Approved	Dollar Amount Approved	Number of Applications Issued	Number of Applications Submitted	Number of Applications Approved	Dollar Amount Approved	
Addison	131	25	9	\$176,600	43	5	2	\$50,100	226,700
Bennington	320	52	21	\$800,400	119	11	4	\$748,400	\$1,548,800
Caledonia	72	12	6	\$104,700	30	5	1	\$3,300	\$108,000
Chittenden	106	18	9	\$196,300	40	4	3	\$220,700	\$417,000
Franklin	23	2	0	\$0	9	1	0	\$0	\$0
Lamoille	36	7	3	\$82,200	21	3	1	\$11,900	\$94,100
Orange	179	45	22	\$705,600	68	8	2	\$893,000	\$1,598,600
Orleans	25	10	5	\$68,500	9	1	0	\$0	\$68,500
Rutland	660	110	44	\$1,339,300	327	41	19	\$1,346,000	\$2,685,300
Washington	730	245	108	\$5,494,700	314	59	27	\$2,915,600	\$8,410,300
Windham	873	161	52	\$2,052,400	487	78	22	\$2,395,600	\$4,448,000
Windsor	1,271	290	112	\$5,915,300	548	91	33	\$2,985,300	\$8,900,600
Statewide Total	4,426	977	391	\$16,936,000	2,015	307	114	\$11,569,900	\$28,505,900
Source: FEMA December 22, 2011									

### **ACTION: Support Continuation of Small Business Assistance through VEDA**

Even with low interest rates, access to working capital for struggling employers can be difficult in this economy, especially if the business is working to recover from a natural disaster. VEDA's emergency loan fund for small businesses affected by Irene continues to draw praise for its good terms and quick turnaround.

To support all Vermont employers, the State should consider augmenting VEDA programs to provide additional assistance to qualified employers. There are many ways to structure the expanded support; ACCD can work directly with VEDA to suggest a strategy that will benefit the greatest number of Vermont employers.

### **INNOVATION: Establish Small Business Champions Team**

Small businesses are vital to the sustained viability of towns and cities across Vermont. Based on experience from other states, 40 to 60 percent of small businesses affected by a disaster closed their doors within two years. Vermont must beat this average if it hopes to have a sustained economic recovery.

ACCD will establish Small Business Champions Teams comprised of state agency, private and non-profit sector partners to visit affected small businesses – starting with ones receiving VEDA and SBA loans following Irene. The team will advocate for affected employers, look for opportunities to assist these businesses, and use various federal, state and Regional Development Corporation tools to increase the probability of success.

### **ACTION: Expand Small Business Toolbox and Increase Downtown Tax Credits**

Irene deeply impacted many of Vermont's downtowns and village centers. Working with business and community development leaders, ACCD will compile tools that communities and businesses can use in their recovery efforts. Current resources include the

### **Vermont Economic Development Authority (VEDA)**

**Tropical Storm Irene Flood Relief Loans**  
**Total Loans Issued: \$14,263,616**  
**As of 1/3/2012**



Downtown Program that works with Vermont's 23 designated downtowns on economic development and revitalization. The program supports local businesses and helps them attract Vermonters and visitors to our downtowns and village centers. In addition, the State should consider expanding its successful Downtown Tax Credit program to spur new development and assist businesses located in our downtowns. This will especially help business districts like Wilmington that were devastated by Irene's floodwaters.

### **ACTION: Implement Aggressive Post-Irene Tourism Marketing Plan**

It is imperative that Vermont continues to aggressively market Vermont as a tourism destination in the wake of Irene. With so many images of an Irene-ravaged Vermont, we must develop a comprehensive tourism marketing plan to show the rest of the world that Vermont is open for business.

The Vermont Department of Tourism and Marketing launched a winter-season advertising campaign to showcase the outdoor recreation and family vacation opportunities that are available today. The department launched two websites: [www.pathtovermont.com](http://www.pathtovermont.com) and [www.vermontepostcards.com](http://www.vermontepostcards.com)

to show out-of-state visitors what a great experience awaits in beautiful Vermont.

### **Agriculture Damage Significant**

Vermont farmers face hardships similar to other business owners. All told, statewide agricultural losses due to Irene are estimated at \$10 million. The potential value of feed damage – attributed mostly to an estimated 120,580 tons of corn silage – is still unknown due to fermentation and potential for mold within harvested feed. If all feed were condemned due to poor fermentation and high levels of mold, the cost to replace the feed could add an additional \$8 million in damage. The current rate to replace feed is \$70 per ton, but as the year progresses, corn silage prices are expected to rise due to lack of supply, raising the concern that feed may not be available at any price.

Livestock farms lost feed for animals, which can affect income over time, while vegetable and fruit farmers lost direct income from the loss of product inundated with floodwaters. Statewide, flooding dam-

aged over 400 acres of land producing fruit and vegetables. Estimates from the USDA Ag Census from 2007 show value for fruits and vegetables at \$4,500 per acre. Using this matrix, the estimated economic loss related to fruit and vegetable farming from Irene is about \$2.24 million. This income loss decreases the reserves that fruit and vegetable farms use for spring-planting needs. Considering the \$2.24 million will not be recovered, some farms that were adversely affected could experience viability issues during 2012.

In the weeks and months since Irene, the Vermont Community Foundation (VCF) has collected donations for the Vermont Farm Relief Fund. In its four rounds, the fund awarded 171 affected farmers grants in excess of \$1.5 million. As of December 23, total contributions received or pledged to the fund exceeded \$2.25 million. The remaining resources will be available for farmers needing emergency feed.

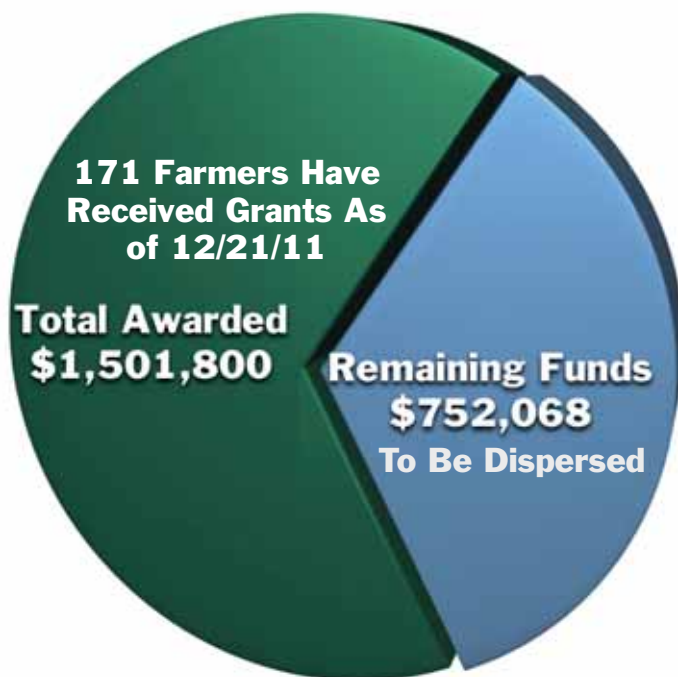
### **Immediate Response to Help Farmers**

In the days immediately following Irene, some dairy farmers were unable to have their milk picked up due to badly damaged roads. Those farmers were forced to dump their milk resulting in additional losses. Transportation access, however, was restored quickly and the problem did not persist.

In response to the storm, the Vermont Agency of Agriculture, Food and Markets (AAFM) assembled a Rapid Assessment and Response Team. The team contacted affected farms to determine immediate need, paired USDA veterinary medical officers with animal health technicians and dispatched them to farms to evaluate needs. The team also partnered with the UVM Extension Service to provide work teams to assist those hardest hit with cleanup, vaccinations, feed and bedding.

The Food and Drug Administration (FDA) also mobilized and quickly coordinated efforts with AAFM to determine the health issues surrounding flooded fruits, vegetables

### **Vermont Farm Disaster Relief Fund Total Raised \$2,253,868**





and livestock feed. The two quickly partnered with the Vermont Health Department to deliver important public health advisories, especially those warning consumers not to eat flooded fruits and vegetables. They also partnered with the UVM Extension Service to inform farmers that crops inundated with floodwaters carried significant risk and that these risks must be mitigated before the crops could be fed to livestock.

### Ongoing Issues with Feed

Immediately following the flood, the FDA ruled that all animal feed inundated with flood water was unfit for consumption unless farmers could successfully mitigate five known risk areas, which include pathogens, pesticides, mycotoxins (the byproduct of mold), PCBs and heavy metals. AAFM prepared a mitigation plan, but it will be months before we know exactly how much feed can be salvaged.

To monitor feed quality, AAFM teamed with the University of Vermont Extension Service to test affected feed monthly, and work with farmers if issues are found. The two agencies will help farmers monitor the health of their herd and the quality of the milk it produces. A hay-and-forage directory is being maintained to help farmers who will have to look for additional feed either through purchase or possible donation.

### **ACTION: Monitor Farm Viability for Spring 2012 and Possibly Beyond**

Stored feed will be fed to livestock until the first new crop of the year is harvested in late May or early June. There is great concern that some farms have stored feed that may not be fit for animal consumption due to molds. Without usable feed, farmers will need to dig into available reserves to fund feed purchases – an untenable position for many farmers. During this period, AAFM will work with farmers to help them determine the quality of their feed inventory, as well as help them ad-



Damaged Clarendon corn field.  
Photo by Lars Gange / Mansfield Heliflight.

just rations to reduce the affects of contaminated feed. AAFM will work with farmers to determine if extra feed should be harvested to better prepare them for next winter.

If feed issues arise, AAFM will work with the Farm Disaster Relief Fund to bring resources to farmers in need. Also, VEDA, through its Vermont Agriculture Credit Corporation, made Irene relief loans available to farmers through December 31, 2011. The agency hopes to work with these organizations to allow farms that have an unexpected feed issue to be able to access the loan program until at least May 2012.

Working with the VCF Farm Disaster Relief Fund, AAFM will provide start-up grants to farms in need during Spring 2012. As we

did in 2009 and 2010, the agency will monitor need for low-interest spring loans to vegetable, fruit and livestock farms still recovering from losses due to Irene. Encouraging farms to work with the Vermont Housing and Conservation Board's Farm Viability Enhancement Program will provide for additional business and recovery steps.

**Montpelier businesses experienced several flood events over a short period of time during the spring of 2011. Many learned from this experience and moved servers, equipment, and inventory so that subsequent flooding did not impact their operations.**

**INNOVATION: Expand Interaction Among Agriculture Partners**

Irene exposed the need for greater communication to better understand the needs of those who grow fruits, produce and vegetables. Ideas for improved collaboration include providing information to foundations on other aspects of agriculture that are open to investment in nonemergency situations. Greater understanding of agriculture activities and requirements will allow for quicker reaction to needs. Building a relationship between the fruit, vegetable and livestock farms may require the agency to reinstate staff participation on various boards.

**INNOVATION: Utilize Case Management System at Agency of Agriculture, Food and Markets**

Working with its partners during Irene, AAFM found that UVM Extension allowed the agency to link into and utilize a web application sharing system. This innovation expedited the agency's ability to respond to farmers adversely affected by Irene. AAFM will work with other state agencies to further adapt the web-based systems to share information and documents that were found to be critical during the response and recovery after Tropical Storm Irene. The agency will continue training staff to use this technology,

which has uses outside of emergency situations. This on-going training will allow for better case management during future emergency situations, as well as ongoing farm support.

**ACTION: Enhance Emergency Preparedness and Continuity of Operations Planning for Businesses and Farmers**

Montpelier businesses experienced several flood events over a short period of time during the spring of 2011. Many learned from this experience and moved servers, equipment, and inventory so that subsequent flooding did not impact their operations.

Both business owners and farmers can benefit from enhanced emergency preparedness and developing continuity of operations plans (COOP). Through collaboration with partners, the State can take a proactive role in working with small businesses and farms to prepare for the next disaster. ACCD will work with VEM, RPCs, RDCs and others to conduct ongoing training and develop COOPs to ensure that businesses are ready for future events and have a plan that will allow them to minimize damage, quickly recover and reopen.

AAFM will provide a checklist of action steps for farmers to take prior to an emergency situation. This checklist will include important steps such as maintaining backup generators; having adequate fuel, feed and water reserves; and preparing an evacuation plan for both people and animals. The agency will work with UVM Extension Service, USDA Natural Resource Conservation Service, the Vermont Farm Bureau and other state agencies to put together this checklist for farmers.

## LIBERTY HILL FARM RENEWS FAMILY COMMITMENT

Bob and Beth Kennett and their family, owners of Liberty Hill Farm in Rochester, are still cleaning up from Tropical Storm Irene, which flooded fields, inundated feed crops, damaged equipment and raged through several buildings, including barns that were not even in the river's flood plain.

By the time the White River receded, damage to the farm was estimated at more than \$500,000, not counting the loss of land – property not likely to be restored as it was literally washed downstream.

"We had to purchase feed, replace farm equipment, and hire extra labor to not only manage the cleanup, but to conduct the extra work it took to get things done," Beth Kennett said. "We still have areas that trucks and tractors can't go because the mud and muck is so deep."

The family, which also operates an agritourism business where guests pay to stay on a working farm, lost additional income as they experienced significant cancellations throughout the fall season.

To regroup, the family cut expenses by downsizing its herd – which before the flood totaled 120 milking animals and an additional 150 young stock and bulls. They received \$10,000 from the Vermont Community Foundation's Farm Disaster Relief Fund – they hope to receive more during future grant rounds – and worked with the Vermont Economic Development Agency to secure a \$100,000 no-interest loan.

"The speed that the State put together these emergency loans was very important," Kennett said. Also, "the volunteers were absolutely vital. The network set up by the Vermont Emergency Response Team was instrumental in our ability to survive during the first couple of weeks."

With winter now settling in, the family will spend the cold-weather months working with a dairy management team sponsored by the Uni-



Beth Kennett of Liberty Hill Farm in Rochester.  
Photo by Irene Recovery Office.

versity of Vermont Agricultural Extension Service and the Vermont Housing and Conservation Board to revise their business plan, which likely includes restructuring their debt and re-strategizing their resources, Kennett said.

"This winter, we will work on financial management issues... but come spring, 100 acres have to be plowed under and replanted," Kennett said. Much of our "pasture land is gone. It was just blown out by Irene. Part of it was washed down river, and other parts are a beach – just rocks and sand."

This extra work means no spring or early-summer harvest, Kennett said. Even under the best of circumstances, the family's first crop will not be harvestable until August, meaning next year's income will also take a hit, she said.

Despite these challenges, her family – led by her sons Tom and David – is committed to farming and will soldier on, she said.

"Money on a farm is always a struggle... so you have to focus on other things," Kennett said. "David and Tom are both committed to farming in Vermont, and they had to renew that commitment after Irene. It would be easy to throw up your hands and give up because everything was buried in sand, mud and muck. Or you could dig deeper and keep going. And that is what they chose to do." §



# Foster Community Recovery

*Vermont will champion local recovery by partnering with towns and cities in their ongoing efforts to rebuild infrastructure, restore services and assist residents and businesses.*



Peter Plagge, Pastor of Waterbury Congregational Church.  
Photo by Irene Recovery Office.

From Wilmington to Waterbury and so many places in between, Tropical Storm Irene's impact on towns was extraordinary. Irene hit some 225 Vermont municipalities – with 45 incurring severe damage.

At a local level, the human tragedy of Irene is magnified many times. There is much more than just homes to repair and property to restore. Families were uprooted to new communities, and kids enrolled in different schools. Neighbors who lost everything – literally everything – now have to rebuild a life that was washed downstream. Survivors, town officials, volunteers and neighbors alike are feeling the weight of this loss and continue to struggle with the difficult questions that lie ahead.

The true impact on communities and their residents is hard to measure, but in its sheer magnitude, is impossible to ignore. State-wide, thousands of homes and businesses were impacted. In many cases, a community's

## Shepherding Local Response

After Tropical Storm Irene hammered Waterbury – damaging 211 homes and businesses, most of them severely – the volunteers came... and came... and came. For several weeks, neighbor not only helped neighbor, but stranger also helped stranger.

Basements were mucked, belongings were sorted, soggy buildings were gutted, and trash was piled six-to-10 feet high on lawns. For days on end, the community filled numerous dumpsters the size of tractor-trailer trucks many times over.

Having dumpsters everywhere made a big visual impact and showed the town was not just going to sit around and worry, said Peter Plagge, pastor at the Waterbury Congregational Church. The size and scale of the initial cleanup effort showed that Waterbury was going to do whatever it took to rebound, he said.

"After the storm it was just apocalyptic – I had never seen anything like it," Plagge said. "We were just in shock Monday morning. I saw people walking around" bewildered and in disbelief. "Nobody was doing anything. Then, just four hours later, everybody was doing something."

Volunteers, many of them from out of town, played a huge part in Waterbury's initial recovery, Plagge said. Without help during those first days and weeks, most home and business owners would not have been able to manage, he said.

"Every person that I have talked to said they have a ledger or note pad full of the names of people who helped them," Plagge said. "They don't even know where to start in terms of thanking people."



But as October turned into November, the need for physical labor diminished and so did the number of volunteers. With the mud and soggy sheetrock now gone, the second phase of the community's recovery – a phase that involves more paperwork than shovels, is more private than public, and is extremely less energizing – is fully underway, Plagge said.

Instead of mucking basements and organizing volunteers, Plagge, who administers the Waterbury Good Neighbor Fund, now spends time helping displaced community members find temporary housing or secure funding to ensure they can heat the home they just spent most of their life savings trying to salvage.

Other local leaders, including members of the town's select board, now spend their time working with FEMA to prepare a long-term community recovery and hazard-mitigation plan, collaborating with various regional nonprofits to figure out ways dozens of damaged historic buildings can be made flood resilient, and meeting with state officials in hopes that the Waterbury State Office Complex – which has been mostly closed since the storm struck – can be rehabilitated and its employees can remain a vital part of the local economy.

"This is stuff that a lot of people don't know is going on behind the scenes. But these things have to get done to preserve Waterbury," Plagge said. "Waterbury got a lot done very quickly, and I do think it gave people the impression we could have things all wrapped up in six months. But this is not the case. We really are into the long, slow slog that is long-term recovery right now."

Just how well Waterbury accomplishes these less visible and more mundane tasks is what will make the difference between Waterbury simply surviving the next few years or thriving well into the future, Plagge said.

"We are moving into a new phase now,"

downtown or village center – nestled close to a river or stream, consistent with our state's traditional settlement patterns – was ravaged by raging floodwaters. Some communities lost vital land records as municipal offices were located in hard hit areas. According to the Preservation Trust of Vermont, more than 600 historic buildings were impacted in over 30 downtowns or villages.

**The true impact on communities and their residents is hard to measure, but, in its sheer magnitude, impossible to ignore. Statewide, approximately 1,500 residences suffered significant damage...Hundreds of businesses were impacted because of the flooding.**

The damage to local transportation infrastructure was immense. Irene isolated 13 communities as all roads leading in and out of town were impassible. On the town highway system, over 2,000 road segments – and more than 200 bridges – were closed in the days after the storm. Over 1,000 culverts were washed out or damaged. As soon as the waters subsided, local road crews and private contractors rushed to make emergency repairs and render critical roads passable. Due to their tireless work, only 21 road segments and 43 town bridges remain closed or impassable as of this report.

In addition to the transportation damage, many towns had to contend with extensive damage to other public infrastructure. Public water supply and wastewater systems experienced significant damage, including groundwater supply sources and waterlines. Some community water systems remain vulnerable to contamination, as repairs are not yet completed.

Town officials, state legislators and other local leaders have done an exceptional job under extraordinary circumstances, but the list of challenges facing impacted towns remains long and complex. The State made a decision early in the Irene recovery that it would aid towns with a range of support, including financial and technical assistance, and to act as

an advocate for towns with federal agencies. The partnership between the State, towns, the Vermont League of Cities and Towns (VLCT) and Vermont's Regional Planning Commissions (RPCs) has been a hallmark of the recovery. This partnership and the ongoing state support of local recovery are critical for Vermont's overall success and must continue.

### **Public Assistance Support and Town Finances**

While the final cost of recovery is not yet known, the magnitude of Irene's impact is expected to stretch many town budgets, some by multiples of their annual totals. Funding from FEMA's Public Assistance (PA) program will help cover most repairs, but towns will face the ongoing challenge of paying for the damages for years to come.

The FEMA PA program is designed to provide substantial reimbursement for damaged public infrastructure such as roads, bridges, culverts, public buildings and water-treatment facilities. In most cases, FEMA PA specialists work directly with town officials to write up "Project Worksheets," which are submitted to FEMA for reimbursement of expenses. The State PA office, which is presently managed by the Vermont Agency of Transportation, helps administer the program and offers towns support and guidance.

Although FEMA Public Assistance provides flexibility to cover most disaster-related expenses, it is a government program thick with regulations and its own lexicon. For many town officials juggling a host of challenges, the program can be complex and unwieldy. Early in the recovery, the State acted to supplement its PA office with outside experts on Public Assistance. These specialists worked in the field, alongside town officials and FEMA's PA staff, in Vermont's hardest hit communities. In addition to helping guide town officials through the PA process, these specialists served as advocates for towns, pushing to maximize the damages eligible for FEMA reimbursement.

Plagge said. "The emergency phase is over."

As 2011 drew to a close, the community continues to make progress. To provide ongoing financial assistance, the community expanded the mission of its long-standing Waterbury Good Neighbor Fund to help disaster victims. Local officials and other leaders also established Rebuild Waterbury, a long-term, nonprofit recovery group whose goal is to help individuals and families rebuild.

More than 160 local homes received moderate to heavy damage, while one of every three village buildings was impacted. To aid their recovery, Rebuild Waterbury hired three full-time professionals – a personal case manager, a construction manager and a volunteer manager – to both provide construction and organizational help.

"A lot of hopes are being placed on these organizations, which may be unfair," said Rebecca Ellis, a Waterbury select board member and one of the town's representatives to the Vermont Legislature. "Everybody knows somebody who was affected... Rebuild Waterbury has a case load of about 30 right now." Certainly there are more people than that who could use help. But with limited funds, the organization "is focused strongly on those people who need help the most," she said.

Given sufficient fundraising, Rebuild Waterbury hopes to eventually serve as many as 70 families, she said. §

Under most Presidentially Declared Disasters, FEMA PA reimburses up to 75 percent of the cost to repair or replace the damaged asset, with the state and town splitting the remaining 25 percent. However, if the actual federal obligations for a disaster exceed a certain threshold – for 2011, the threshold is \$127 per capita or about \$80 million for Vermont – FEMA will reimburse up to 90 percent, leaving the remaining 10 percent for the state and towns to split. As of this report, the damage estimate for Public Assistance alone far exceeds the \$80 million threshold, so the State expects to receive the 90-percent match rate.

While this is good news, it only tells part of the story. Towns have been forced to cover the cost of repairs out-of-pocket until the reimbursement arrives, which can take months. This has left town officials scrambling to find alternative financing to cover expenses.

Vermont, led by State Treasurer Beth Pearce, initiated a series of actions to assist towns with cash-flow issues. The Treasurer advanced payments of key state and federal programs, and initiated the Community Disaster Loan program with FEMA. The Municipal Bond Bank started a program to assist towns with low-interest loans to finance response and recovery efforts.

**FEMA Public Assistance  
Vermont, Tropical Storm Irene**

County	Number of Public Assistance Projects	Actual Obligation	Federal Share	State Share	Local Share
Addison	19	\$587,781	\$440,836	\$88,167	\$58,778
Bennington	21	\$1,401,694	\$1,051,271	\$194,581	\$155,843
Caledonia	19	\$1,291,296	\$968,472	\$180,663	\$142,161
Chittenden	12	\$1,108,936	\$831,702	\$77,613	\$199,621
Essex	2	\$27,052	\$20,289	\$3,382	\$3,382
Franklin	3	\$255,655	\$191,741	\$33,956	\$29,957
Lamoille	10	\$1,294,884	\$971,163	\$8,955	\$314,766
Orange	20	\$686,826	\$515,120	\$89,254	\$82,452
Orleans	18	\$941,411	\$706,058	\$139,274	\$96,079
Rutland	47	\$1,828,583	\$1,371,437	\$250,431	\$206,715
Washington	34	\$1,592,219	\$1,194,164	\$196,674	\$201,381
Windham	48	\$3,478,435	\$2,608,826	\$518,968	\$350,641
Windsor	48	\$3,730,256	\$2,797,692	\$544,501	\$388,063
Statewide Projects	26	\$1,492,858	\$1,274,805	\$0	\$218,053
Statewide Total	327	\$19,717,886*	\$14,943,576	\$2,326,418	\$2,447,892

\* Please note that is actual obligations as of December 28, 2011. The estimate for total Public Assistance is projected to be as much as seven times this initial amount.

Source: VTrans  
December 28, 2011

Vermont banks were also quick to respond, offering favorable terms and fast turnaround, and have been good partners throughout the recovery.

The Administration and Legislature took additional steps to help local finances by agreeing to abatement assistance for the statewide education property tax, as well as a package of measures that accelerated highway aid and education payments and allowed disaster-impacted towns to defer education payments.

### Community Recovery Partnership

Many communities are now turning to long-term recovery work and applying the same cooperative spirit not only for rebuilding better than before, but also for enhancing our ability to withstand future disasters. FEMA offers long-term community recovery and planning support, but limits its involvement to only the most severely impacted. In Vermont, the towns of Waterbury and Wilmington/Dover are the only communities that were granted FEMA long-term community recovery

With FEMA concentrating on a select few towns, this leaves many other communities on their own to deal with expenses related to the storm and to provide support to individuals whose lives were severely disrupted. Communities also must develop short and long-term recovery plans, and implement those plans with limited staff and expertise.

To augment FEMA's assistance and provide communities with a unique collaboration with state agencies, the Governor launched the Community Recovery Partnership. This initiative, already underway, employs a series of conversations throughout the state to reach out, listen and better understand local recovery goals. Cross-agency teams attend these meetings to allow the State to identify short and long-term needs, and develop a framework to help communities emerge from this disaster stronger and more resilient.

Each community visit is designed to hear from local and regional officials, chambers of commerce, area non-profit organizations and the general public about challenges for housing, businesses, human services, river and flood-plain management, infrastructure, and other topics. The state partnership team summarizes the results of these community conversations to help local recovery efforts and to assist the state in understanding communities' long-term recovery needs. The team also tracks and responds to immediate questions and issues raised after each meeting. To date, issues raised included concerns over the length of time to receive insurance claims, the desire for case studies on mitigation techniques, and how towns can pay for expenses not covered by FEMA.

As of this report, meetings have been held in Grafton, Waterbury and Waitsfield. Eight to ten others will be scheduled during January and February 2012. The goal is to offer meetings that include the 45 hardest hit communities and others that are interested. In early March, ACCD will work with the Irene Recovery Office on a plan for the longer term



Governor and cleanup crew.  
Photo by Governor's Office.

ery and planning support. Even with this aid, Waterbury, Wilmington and Dover likely will need to develop long-term leadership and find funding necessary to implement their plans.



that will more effectively support local recovery and rebuilding efforts, as well as begin to match needs with existing services in the short term. The wealth of local experience captured in these conversations will lay the foundation for a stronger, smarter and safer state.

ACCD also researched national long-term recovery efforts from similar disasters to determine lessons learned, identify potential funding sources and understand best recovery practices. The Governor's Institute on Community Design was tapped to help state officials learn from those who have experience in disaster recovery, and help them to better understand what lies ahead as well as set goals, make recommendations and develop systems for working together.

### Historic and Cultural Resources

Vermont's historic resources are an important part of Vermont's brand, which not only ties us to our past, but also maintains a vital link to our future. On September 15, ACCD activated a Historic and Cultural Resources Task Force comprised of representatives from 28 different state and federal agencies, regional planning commissions, universities, consultants and non-profit agencies. The task force collected information on a wide variety of issues pertaining to historic buildings, archeological sites, art and cultural centers, and historic documents.

The task force helped FEMA's Historic Preservation Team understand the importance of these resources to the fabric of individual communities as well as the overall Vermont brand. The Task Force also assisted the FEMA team to develop and distribute guidance material on potential funding sources, cleanup measures, future mitigation and the National Flood Insurance Program.

### **ACTION: Expand Financial Support to Severely Affected Towns**

Even with a 90-percent match for FEMA Public Assistance (PA), many towns will ex-

perience an ongoing struggle to pay for Irene-related repairs. In addition to the PA cost share, local taxpayers also will have to pay a share for Federal Highway Administration ER costs, unreimbursed expenses and abate-



Pittsfield from the air.  
Photo by VAOT.

ments, which for small, deeply-impacted communities will be a heavy burden for years to come.

To help the hardest-hit towns with financial assistance, the State should consider increasing the cost share for FEMA PA and FHWA ER.

For this purpose, the State should classify "hard hit" as having damages greater than a threshold to be determined by the Secretary of Administration, in consultation with the Secretary of Transportation and Irene Recovery Officer.

Also, the State should continue to push FEMA to expedite payments to communities once Project Worksheets are submitted. The State has augmented its resources to turn funds around to towns within 48 hours once obligated by the federal government.

### **ACTION: Maximize Public Assistance 406 Hazard Mitigation Funds**

Under the PA program, certain hazard mitigation monies allow towns to incorporate mitigation practices into reconstruction of damaged roads, bridges and culverts. This program is called “406” funding (from section



West River dam.

Photo by Lars Gange / Mansfield Heliflight.

406 of the Stafford Act governing federal disaster relief) and is separate and distinct from the section 404 Hazard Mitigation Grant Program (HMGP). In the 406 program, for example, a

damaged culvert could get upsized for better flood resiliency. Vermont has directed both FEMA and the State’s on-the-ground technical assistants to maximize this program when drafting project worksheets for PA funds.

### **ACTION: Prioritize Disaster Funding for Community Recovery**

There are smaller pots of federal money outside the realm of FEMA and the Federal Highway Administration (FHWA) that could benefit community recovery, including support for home buyouts through HMGP and local economic development.

Historically, Vermont has been very successful using federal Community Development Block Grant (CDBG) funds through ACCD’s Vermont Community Development Program to assist communities in a variety of ways. Congress authorized \$400 million in CDBG Disaster Recovery grants for states affected by disaster in calendar year 2011. Although 48 states could qualify for the grants, Vermont is confident that it will receive a por-

tion of the overall appropriation. A disaster allocation of CDBG funds will be an important tool for helping community recovery and providing HMGP matching funds.

Certain town projects do not qualify for either FEMA PA or FHWA ER, leaving gaps in financial help needed to complete repairs. Some of these projects are likely eligible for funding from the U.S. Department of Commerce’s Economic Development Administration (EDA). The EDA has been part of the FEMA recovery team that has reviewed some of these projects. Congress approved disaster funding for EDA to be distributed amongst states experiencing disasters in calendar year 2011. How much funding Vermont may receive is unknown at this time. If funding comes, it can help mitigate some of these needs. EDA’s regular funding is a resource for economic development projects.

### **ACTION: Continue State Support for Strong Local Recovery**

Community recovery will occur on many levels. Affected residents will need ongoing assistance and services to help rebuild their homes and lives. Businesses will need a network of support to reopen and thrive. And local roads, bridges and buildings will need care and attention to improve safety and flood resiliency.

All of these efforts will occur against the backdrop of long-term decisions about rebuilding with the goal that key infrastructure, housing and businesses are restored in a manner that better prepares the community for the next disaster event. Decisions must be made about rebuilding hundreds of homes, businesses and public infrastructure with limited time and planning. These decisions must also be made in the context of a complex system of flood-plain protection requirements associated with the National Flood Insurance Program (NFIP).

Many homes, businesses, historic resources and long-established neighborhoods are

located in Vermont's traditional downtowns and villages, which historically were settled near water. This means many are located in flood plains. As a result, there will be tension between the goals of flood resiliency and community preservation, which could find themselves at odds. These goals, however, can be mutually reinforcing. Greater flood resiliency can contribute to community preservation. The challenge is to make decisions that maximize both goals.

The Irene Recovery Office will work with state agencies and the RPCs to develop ways to help communities identify near and long-term environmental needs and draft recovery plans. The State and RPCs also will help rebuilding communities understand and implement flood management, land-use planning that considers mitigation and adaptation, mitigation in existing settlements, and protection of historic resources.. Careful coordination between ACCD, ANR, the historic preservation community, and town planning and zoning boards is paramount as the rebuilding effort continues. ANR will continue work with FEMA and communities to ensure that flood plain and erosion hazards are considered in determining where development and redevelopment should occur.

#### **ACTION: Encourage Community Service to Aid Recovery**

The need for skilled volunteer labor will remain constant during the months ahead. The Irene Recovery Office will convene local and statewide community service organizations to establish a plan to direct their efforts in the coming year on recovery activities. The groups will include the SerVermont, Vermont Youth Conservation Corps, service organizations and community-based learning programs. The Recovery Office will also explore using inmates from Corrections' work camp for appropriate activities.

Within the right focus, these community teams could offer all types of services, from light

carpentry and debris clean up, to waterway and watershed mitigation. Local and regional groups focused on recovery, such as the LTRCs, would identify the work that these teams would conduct in local communities.

#### **ACTION: Memorialize Irene's Impact**

To recognize the magnitude of this historic event, Vermont should consider the creation of Irene historic markers that can be placed in strategic locations around the state. Conducting a design competition for the markers could engage Vermont's wealth of arts, culture, heritage and historic societies, and funding could possibly come from the National Endowment for the Arts or other such grant-giving institutions.

# Rebuild Our Roads, Bridges, and Rails

*Vermont will continue its strong work at a state and local level to rebuild and repair roads, bridges, culverts and rails damaged by Irene without losing sight of the overall infrastructure needs.*



Betty Chase standing in front of the temporary Route 73 bridge.  
Photo by Irene Recovery Office.

Route 73 is just one of many vital transportation corridors damaged by Tropical Storm Irene. Statewide, more than 500 miles of state highway and some 200 state-owned bridges sustained damage. Thirty-four bridges were completely closed. Initially, 13 communities were isolated as all roads leading in and out of town were impassible.

On the town highway system, over 2,000 road segments – and nearly 300 bridges – were closed in the days after Irene. Over 1,000 culverts were washed out or damaged.

Vermont's railroad infrastructure also suffered. As a result of Irene, more than 200 miles of state-owned rail was impassible, and six rail bridges were badly damaged. The privately owned New England Central Railroad sustained heavy damage, requiring repairs at 66 separate locations.

Public transit facilities and airports also experienced damage, albeit relatively minor. Green Mountain Transit Agency's Berlin of-

## Answering the Call

Betty Chase is not a sprinter. But when Tropical Storm Irene destroyed the Route 73 bridge that the Rochester EMT uses to reach her ambulance, she was forced to use a makeshift pedestrian bridge and literally make a quarter-mile mad dash to where her vehicle could be safely parked along Route 100.

The run, which she made numerous times during the seven-week period before the Vermont Agency of Transportation could erect a temporary vehicle bridge, added minutes to her emergency response at a time when losing seconds could mean the difference between life and death.

"It was less than ideal," said Chase, who works for Valley Rescue Squad and responds to emergencies in Rochester, Hancock and Granville. "I am not too out of shape or overweight, but there were times I had trouble running to the truck... I had one call where I had to cross the footbridge at 10:30 at night, and the ambulance had to meet me at the other side."

Fortunately, no one suffered or died as a result of her predicament. But the unusual circumstance clearly highlights how critical transportation is to everyone's daily lives, and just how important it was that VTrans reopened the vast majority of the Vermont State Highway Network within just weeks of the storm.

Chase and her family live along Wing Farm Road in the Maple Hill Section of Rochester. When Irene struck on August 28, it delivered a crushing blow to the nearly 200 homes nestled along Route 73's five-mile stretch just west of the White



River. Not only did the storm completely destroy the 75-foot long bridge that crossed the river and connected their community to Route 100, but Irene also washed away complete segments of Route 73 in the other direction, which is known as Brandon Gap Road.

“For a week, we could not get one way or the other,” Chase said.

A local resident with significant health issues was immediately evacuated as a precautionary measure, and within a few days a local rescue squad managed to navigate the destroyed road from Brandon so that an ambulance could be parked at Chase’s home. If the ambulance was needed, those involved in the transport had the option of meeting another ambulance at the top of Brandon Gap and transferring the patient. The transfer was suggested because the drive took so long over the nearly impassable road that it was risky to leave Maple Hill without emergency transport that long.

Community members aptly started referring to their neighborhood as “the island,” Chase said.

To access the rest of Vermont during non-emergencies, community members constructed a wooden footbridge – which VTrans quickly upgraded – that crossed the White River to

Route 100. From their homes, people drove to the riverbank, park their vehicle on land owned by a local farmer, walked across the footbridge, and then got into a second vehicle that they left parked in a makeshift lot along Route 100.

But if one family member was using that vehicle, other family members had to walk about a mile into town to shop or run errands.

“You did not just zip into town for one thing,” Chase said. “If you made a trip, you got your mail, some groceries and anything else you could fit in a backpack.”

After a couple of weeks, VTrans improved Route 73 heading west towards Brandon just enough so that locals driving 4WD or all-terrain vehicle could pass. Reestablishing vehicular traffic to Route 100, however, took longer. Crews had to remove the destroyed bridge before erecting a temporary new one. On October 15 – nearly seven weeks after the storm struck – two-lane vehicular traffic was restored.

While the seven weeks were certainly stressful and inconvenient, no one suffered any lasting consequences while the bridge was out of service, Chase said.

“We got very lucky,” she said. “We dodged a bullet.” §

fice flooded, causing damage to 13 vehicles, some of which were totaled. The Hartness Airport in Springfield sustained damage to three hazard beacons.

With transportation damage spread across more than 200 towns, the Vermont Agency of Transportation quickly established three Regional Incident Command Centers as a way to effectively redeploy personnel and to expedite emergency repair work. Restructuring agency response into the command centers, which were strategically located near the areas of greatest impact, was a critical decision that greatly aided recovery response and resulted in VTrans completing major roadway

repairs in less than four months and reopening the entire state highway network in time for winter.

Major accomplishments include:

- Reached all isolated communities within three days of the storm;
- Helped utility companies reestablish power to about 98 percent of households and businesses within five days;
- Reestablished heavily damaged, critical east-west travel corridors including Route 4, Route 9, Route 11, Route 103 and Route 125 within 15 days of establishing the Incident Command Centers;
- Developed a Google Irene Crisis Map with

mobile-phone application to inform the traveling public of changing road conditions;

- Reopened all major rail lines within five weeks;
- Within two months of the storm, reopened all but two bridges and 19 miles of state highway to public travel; and
- Reopened the entire state highway system within four months.

### **Herculean Effort with Many Partners**

Achieving these unprecedented milestones involved the herculean efforts of literally thousands of people and dozens of state, federal and local agencies, as well as countless private contractors. At times, people literally worked around the clock to reestablish transportation corridors that are vital to both public safety and the state's economy.

Realizing the magnitude of repair efforts was beyond its capacity, the Vermont Agency of Transportation quickly sought help. Through the Emergency Management Assistance Compact, the State received National Guard assistance from seven states: Maine, Ohio, Illinois, South Carolina, Virginia, West Virginia and Vermont. The Maine Department of Transportation sent 149 personnel and 145 pieces of equipment to aide Vermont for two weeks, while the New Hampshire De-

partment of Transportation supported the effort daily with staff and equipment, such as dump trucks, bulldozers, bucket loaders, rollers and backhoes.

The Civil Air Patrol worked with VTrans' Aviation Division to coordinate aerial sorties to photograph all rail lines, state road-

ways, state bridges and riverbeds. The air patrol also coordinated airspace for the National

Guard, and organized both landing areas for military recon flights and staging areas for relief supplies to be airlifted to cutoff civilians. The airports in both Rutland and Fair Haven were vital to these efforts.

Public transit providers including Addison County Transit Resources, Chittenden County Transportation Authority, Connecticut River Transit, Deerfield Valley Transit Association, and the Marble Valley Regional Transit Network all provided emergency services in some capacity. Their assistance ranged from transporting Vermont State Hospital patients to safe locations, to providing general evacuation assistance. Many also operated modified or extended services until damaged roads were repaired.

The private sector played an essential role within the emergency response effort. An estimated 200 private contractors and consultants, employing some 1,800 people were deployed to VTrans' emergency response. In addition, the Vermont chapter of Associated General Contractors (AGC) provided critical direct assistance to towns by developing a resource list of available contractors and helping to connect towns in need with appropriate resources. Private contractors provided assistance that ranged from project engineering and design support, to roadway rebuilding, bridge repair, and material and equipment supply.

Vermont Rail Systems repaired washouts in 107 locations along state-owned track, and rehabilitated six badly damaged bridges. The company helped Amtrak restart its Ethan Allen passenger service within three days of the storm, and restored normal freight service within three weeks. Vermont Rail Systems also created a special freight service dubbed the "Rock Train" operating on the New England Central Main Line to supply vital material that was quarried in Chittenden County and delivered to Bethel – a distance of about 100 miles – so Route 107 could be rebuilt between Bethel and Stockbridge.



Haul unit fording the river.  
Photo by VAOT.

## Cross-Agency Collaboration

Support from several state government agencies was critical to allowing VTTrans to both complete repairs quickly and to communicate changing road conditions with the travelling public. The ability for Vermonters, freight haulers and out-of-state visitors to travel safely throughout the state was essential to ensuring the delivery of goods and services, supporting Vermont's businesses and maintaining a healthy fall foliage season.

Within 48 hours of the Irene response, VTTrans established a Google Irene Crisis Map with pro-bono daily support from Google. The map was updated twice daily to provide real-time information to travelers. The Vermont Department of Tourism and Marketing also worked closely with VTTrans to coordinate outreach to Vermont visitors and the tourism industry. In addition to updating the staff at the Vermont Welcome Centers, the department re-purposed its "1-800-Vermont" Call Center to become an Irene hotline that provided a central repository for Irene-related travel information.

To expedite delivery of heavy material to areas in need, the Vermont Department of Motor Vehicles issued special permits that allowed heavy-vehicle passage in restricted areas. The Vermont Natural Resources Board allowed gravel extraction where needed by temporarily suspending restrictions on gravel extraction and worked with VTTrans to manage the impacts from gravel extraction activities on local communities.

The Vermont Agency of Natural Resources worked tirelessly to expedite permits, and its River Management Division partnered with VTTrans to supply needed river engineering expertise. VTTrans and ANR spent weeks touring roadway worksites together to help guide repair work, debris removal and develop river-restoration plans.

Within the first week following the storm, VTTrans realized it did not have the resources to both repair the state highway network in

time for winter and provide extensive assistance to municipalities struggling to repair their own roadway network. Vermont's Regional Planning Commissions (RPCs) were enlisted to help fill that void, and quickly established a regional command center to coordinate municipal-assistance efforts. The commissions inventoried all municipal road and bridge closures, created a GIS-based map, and become a critical link between the State and towns for assistance on road and bridge repairs. The RPCs also worked with VLCT and AGC to link towns with needed resources – including experienced town managers and road crews – to help administer the response and find contractors to complete repairs.

## Unprecedented Coordination with Utilities

Restoring utility service to affected Vermonters was an essential part of the successful response and occurred alongside the emergency repair work on roads and bridges. The state's electric and telecommunications utilities had a fair amount of warning that the storm was coming. Weather alerts to utilities began approximately one week prior to the storm, and the emergency preparation procedures utilized by the utilities, the Department of Public Service, and VEM were activated five days before Irene struck Vermont. The movement of supplies to central locations and the calling in of utility work crews from states west of Vermont for assistance began well before the storm hit.

Ultimately, over 60,000 homes and businesses in Vermont were left without electric power all across the state, with the highest concentration of damage in southeastern Vermont. Crews began restoration work almost immediately because wind ended up not being a major



Damaged Green Mountain Railroad bridge in Chester.  
Photo by VAOT.

factor in this storm. Tree-clearing crews were readily available, but even with the advance



Route 73 bridge in Rochester.  
Photo by VAOT.

planning, line crews were harder to come by. Some crews were brought in from Canada, while Homeland Security personnel at FEMA assisted in getting those crews across the border smoothly and with minimum time lost.

Five days after the storm, all but approximately 1,000 homes and businesses were reconnected to utility services. The web site [vtoutages.com](http://vtoutages.com), which lists power outages by electric utility and county, is used during storms such as Irene to monitor electric power outages and helps the public and media track what is happening statewide. On September 2, all electric customers were restored with the exception of those that were located on town or private roads not yet accessible to utility crews.

In addition to good advance planning, the direct coordination and communication between the utilities, VTrans and local road crews was a critical factor in getting people reconnected. Although a couple of unnecessary outages occurred because work crews accidentally cut through underground cables, the overall effort proved swift and successful, and stands in stark contrast to recent natural disasters in other states where power restoration has been a major issue.

The Vermont Electric Power Company (VELCO) lost its Cold River to North Rutland transmission line when the ground beneath the poles was swept away so that the line could not be replaced exactly where it had been. VELCO, the Department of Public Service, Public Service Board and Governor's Office coordinated the use of a seldom used emergency power, under Section 248(l) of Ti-

tle 30, to allow for the reconstruction of these transmission lines without the usual 248 procedure preceding the construction. Central Vermont Public Service also used the procedure to reconstruct a line on short notice. This emergency procedure was instrumental in getting electric lines restored.

#### **ACTION: Continue Repairs and Monitor for New Hazards**

Given the emergency nature of many Irene-related road and bridge repairs – coupled with the fact that many river channels have been changed significantly and some rivers still contain debris – there is uncertainty around the spring flood risks, particularly if heavy rains are coupled with rapid snow melt. Plus, hidden hazards like sinkholes and bank slides continue to crop up in storm-damaged areas.

VTrans will be vigilant throughout the winter and spring to monitor roads and identify problems before they become safety issues. A Rapid Response Team has been created with ANR to respond to emerging hazards.

Long-term repair plans are being developed as the scope of ongoing needs becomes clearer. While the entire state roadway network is now open, repair work along Irene-damaged locations will continue with both emergency responses and long term rebuilding. Nine bridge locations are being served by temporary structures, and VTrans will program and schedule permanent replacements.

#### **ACTION: Enhance Traveler Information Services**

Recognizing that public outreach is a core function of ensuring safety for the travelling public through any weather event, VTrans will build upon its experience creating the Irene Crisis Map to modernize its web interface and social-media tools to provide better communication with the public.

VTrans will update its web-based 511 Traveler Information System, in partnership with



Maine and New Hampshire through the “Tri-State Initiative” to improve traveler services. VTrans will continue work with the Department of Tourism and Marketing as well as the Department of Information and Innovation to establish protocols for using 1-800-Vermont as a hotline when 24/7 public information is needed. Vermont’s various Welcome Centers should also be fully integrated into all public-outreach efforts, including those related to winter travel.

#### **ACTION: Qualify State Snowmobile Trail System for FEMA PA**

During both the Spring floods and Tropical Storm Irene, the State Snowmobile Trail System (SSTS) sustained over \$700,000 in damages to portions of the trail on public lands. The SSTS consists of approximately 6,000 miles of trails on public and private property. The use of the property for the SSTS is authorized through a variety of easements, deeds and contracts with private and public landowners. VTrans and the Department of Forest, Parks and Recreation (FPR) own some public lands used for sections of the SSTS. Since the Spring floods and throughout the response to Irene, the State convened a cross-agency team to work directly with FEMA to qualify these repairs under the FEMA PA program. This team, led by the Congressional Delegation, includes representatives from the FPR and VTrans.

At the time of this report, FEMA has prepared and is processing project worksheets for the damages portions of the SSTS on State Forest land and is still working through qualifying the portions of the SSTS on the Lamoille Valley Rail Trail, owned by VTrans.

#### **ACTION: Expand Inter-Agency Collaboration and Coordination**

The success of Vermont’s transportation-related response to Irene is due in equal parts to the talented and dedicated staffs at multiple state agencies, as well as an unprecedented level of partnership and collaboration

both outside of and within state government. These partnerships will be needed even more throughout the recovery process that lies ahead.

Repairing bridges, roads, rail and culverts requires cooperation from many state and federal agencies. Permits are required from both the ANR and the U.S. Army Corps of Engineers, while close collaboration with river scientists at ANR’s Department of Environmental Conservation is imperative to ensure roadway reconstruction is both environmentally sound and done in a way that transportation assets can coexist with rivers and streams. Given that Vermont has a large tourism industry that largely depends on the state highway network, the Vermont Department of Tourism and Marketing is a key communications partner.

Vermont Emergency Management, as well as Vermont’s many towns and its network of Regional Planning Commissions also are key partners in emergency relief. Making government more effective and flexible to the changes ahead will require an increased ability to tear down the “silos” of state government. Interagency collaboration and joint work will become essential. Irene demonstrated the benefits of this, and sets the stage for an ongoing and more fundamental approach to institutionalizing interagency collaboration both for the sake of Irene recovery as well as to effectively meet other ongoing challenges.

In terms of meeting transportation-related challenges, enhanced collaboration must include:

- Ongoing partnering between VTrans and ANR, including integrating river science expertise within all future VTrans’ incident command centers;
- Better coordination between VTrans, ANR



Thank you sign on Route 4.  
Photo by VAOT.

and the U.S. Army Corps of Engineers regarding a rapid permit process for emergency repairs;

- Working with the Federal Highway Administration to improve its Detailed Damage Inspection Reports (DDIR) and Emergency Relief processes;
- Work to optimize federal funding reimbursements from both FHWA and FEMA;
- Work to expedite FEMA reimbursements to towns;
- Institutionalize protocols between VTrans and the Department of Tourism and Marketing to enhance communication with the traveling public;
- Maximize state agency coordination with the Department of Information and Innovation to best use VT.gov during an emergency; and
- Work with towns and Regional Planning Commissions to better utilize and expand their capabilities, and institutionalize their roles during future disasters.

#### **INNOVATION: Convene Transportation Innovation Working Group**

While Irene brought many challenges, hardships, and tragedies, the statewide emergency response also engendered an inspira-

tional spirit of cooperation and opened a window into how our policies, practices and procedures may be improved for the general benefit of all Vermonters. There are many lessons to be learned from this experience. VTrans' ability to successfully confront challenges with a spirit of partnership,

unity of purpose, mission-driven dedication and urgency resulted in innovations that should be recognized, and where possible,

institutionalized. These include immediate changes to better prepare for and respond to the next weather event or disaster, as well as longer-term innovations within the agency to expedite the project-delivery process.

VTrans will convene a Transportation Innovation working group to capture innovative practices not only at the agency, but also within the transportation profession in general. The group will establish an ongoing forum that can both nurture innovation within the agency, as well as build upon existing road and bridge design-and-construction innovations that are underway across the country. This will help the agency transform to meet the challenging and changing demands placed upon it.

VTrans will incorporate a range of partners into its group – such as AGC, UVM and the RPCs – and use Irene as a springboard for innovation. The Federal Highway Administration supports such thinking, and little more than a year ago altered and reinterpreted some of its regulations before initiating its Every Day Counts initiative that encourages states to find ways to expedite project delivery.

#### **INNOVATION: Create Rapid Bridge Deployment Pilot**

While the process of learning from Irene has just begun, a few clear lessons have emerged that warrant immediate action to save both time and money on transportation projects.

Irene showed that highway and bridge projects can be brought to fruition faster, safer and possibly at less cost if the roadway is completely closed to traffic during construction. Eliminating traffic allows work crews undivided attention and plenty of space to conduct repairs, while curtailing use of traffic workarounds, like temporary bridges, saves both time and money.

Also, during Irene recovery, project contracting, scoping, permitting and right-of-way acquisition was expedited. While every



National Guard troops receiving VT Route signs with their unit numbers on them. Photo by VAOT.

disaster-related timesaving measure might not be applicable to normal practice, all deserve a look to better understand whether they can be incorporated into standard procedure.

As an early innovation, VTrans created a “Rapid Bridge Deployment” pilot with two goals:

- Within three years, having all active bridge projects contracted for construction (assuming available funding)
- Cut project delivery time in half to average 24 months from initial scope to construction contract

With improved collaboration inside of VTrans and with partner agencies, the pilot will expedite the design, permitting and building of bridges creating the potential for significant financial savings and shorter construction times. VTrans has established a special unit within its Structures program to manage the pilot, and will work closely with ANR to collocate personnel and build a framework for expedited permitting.

### **POLICY: Consider Hazard Mitigation and Flood Resiliency in Project Design and Prioritization**

Many existing road segments, bridges and culverts are particularly vulnerable to flooding and fluvial erosion due to their co-existence with Vermont’s waterways located in narrow river valleys. If bridges and roads are not designed and maintained adequately, they could fail hydraulically and cause intensive impacts on nearby public infrastructure, private property and natural resources.

VTrans uses a technical prioritization system that guides decisions about capital programming for both roadway and bridge rehabilitation and reconstruction projects that use state and federal funds. The scoring methodology for bridges and roads is generally based on structural condition, consistency with design standards, safety, importance to the statewide road network, cost, and regional priority.

VTrans should review how it designs its roadways and structures, as well as its maintenance practices, to ensure those designs account for vulnerability to and impact on flooding and fluvial erosion. An accompanying change in prioritization system would elevate vulnerable assets in the project development process, and in the long run will improve overall system resiliency. The vulnerability criterion should be developed in coordination with ANR and RPCs.

VTrans should review all other programs, including town grant programs, to look for opportunities to prioritize projects and maintenance strategies that will reduce risk of future flood hazards in vulnerable areas. VTrans will work with towns, VLCT, Vermont Local Roads and the RPCs to foster a culture of transportation flood resiliency across the state.

### **POLICY: Sustain Focus on Statewide Transportation Program**

It is worth noting that all Irene-related repairs will be added to an already overwhelming workload associated with maintaining an aging transportation system. Paying for the state share of these repairs out of a transportation budget that is already stretched poses a significant challenge and may result in the postponement of critical repairs to some of the state’s aging transportation infrastructure.

VTrans will continue to work closely with the Legislature to use asset-management principles and the agency’s project prioritization system to maximize available funding.



Governor Shumlin opening Route 4.  
Photo by VAOT.

# Manage Environmental Impact

*Vermont will continue to honor its strong environmental ethic through the ongoing response and recovery. Our efforts will apply river and flood plain management that protects our communities and our environment in partnership with local government, small businesses, farmers and property owners.*



Kellie Burke and June Tierney standing on the island that is their home.  
Photo by Irene Recovery Office.

Allowing rivers and streams the latitude to move and spill into their natural flood plains is sometimes easier said than done. Vermont's historic settlement patterns and topography limit the choices on how we live in the landscape. In many towns, there is already significant development along rivers, streams and lakeshores. Also, many wetlands and forestlands have been developed and no longer serve to capture and store floodwaters.

In other words, land use patterns in Vermont can be directly related to flood damage. Buildings and transportation infrastructure like roads and bridges that were located in flood plains and flood-hazard zones along river corridors took the brunt of Irene's wrath, and will be the most at risk in the future.

The magnitude of flood plain encroachments located across Vermont obligate the

## Fording Uncertain Futures

June Tierney and Kellie Burke now live on an island created by Tropical Storm Irene.

Before the storm struck on August 28, the Gilead Brook ran behind their Bethel home. When the storm was over, the brook had relocated to the front of their home, leaving the building perched atop a silt and gravel-ridden, banana-shaped island about 150-feet long.

"The brook left its old bed and created a new one, and in the process severed my property from the town road," Tierney said. "I now have a 100-foot-wide canyon, 30-feet deep instead of the three open acres of lawn that used to be there. In back of the house is the old, abandoned brook bed that is about 40 feet wide and 20 foot deep, and still carries a trickling stream."

The house, which the couple has called home since 1998, was miraculously left intact. Not a shred of damage. And there in lies the couple's problem. They no longer believe it is safe to live in their home, but their insurance company will not condemn the building because it sustained no damage.

"I had flood insurance and homeowners insurance, but neither covers this particular (damage) pattern," Tierney said. "We had a flood, but flood insurance only covers the structure, it does not cover access" to the structure.

Currently, the couple is fording the brook to reach their home, but doing so is dangerous – especially when it rains – and not a



permanent solution, Tierney said. Building a bridge is possible, but extremely costly, she said.

"I can build a bridge for \$164,000 on a property that is not worth that – and by the way will not survive the next flood," she said. "We park cars off the property when we hear rain is coming. But you can't live that way, nor should you. We can't stay here."

With no help from insurance, the couple is hanging their hope on Vermont Emergency Management's Hazard Mitigation Grant Program. Funded through the Federal Emergency Management Agency (FEMA), the program provides federal funds so that communities can acquire property deemed at risk due to potential future flooding and other natural disasters.

Due to recent flooding from a combination of last spring's storms as well as Irene, Vermont expects to receive about \$23 million in federal hazard mitigation funds that can be used for a variety of purposes, including home acquisition. The program, which requires the town to sponsor individual landowners, covers up to 75 percent of the home's value.

Other qualifying uses for the money in-

clude repair and mitigation of local roads and bridges, structural elevations or relocations, replacement of undersized culverts, remediation of stream-bank erosion and hazard-mitigation planning. The process is competitive, and Vermont has lots of need, so there is no guarantee the couple will receive financial assistance. They just hope the panel that reviews applications will give them due consideration and not penalize them because their home was not actually destroyed.

"That is all I can hope for," Tierney said. "I am the most cooperative landowner you could look for. But our fate is in the hands of other folks."

Their situation is unique but serious. Despite their good fortune that floodwaters did not inundate the home and destroy their possessions, their property as a result of the flood no longer has value.

"Not only should Kellie and I not be living there – no one should be living there," Tierney said. "I don't see how I can sell to anybody" because even if I could find a buyer, the next storm could wipe everything out and possibly kill someone if they are in the house. "I don't want that on my conscience." §

State and its communities to evaluate how to best balance where and when to protect or rebuild after a major flood event like Irene. The State will continue to work with not only local communities, but also other state agencies, small businesses, farmers and property owners to help protect and enhance Vermont's flood plains, shore lands, river corridors and wetlands so that damage from future storms can be minimized.

### **Immediate Response to River Issues**

Vermont's Agency of Natural Resources (ANR) and its River Management Program had a very personal struggle with Irene. Floodwaters from the tropical storm heavily damaged the agency's Waterbury head-

quarters, destroying equipment and severely hampering communications. Despite this setback, ANR's river engineers were on the ground and assisting both towns and VTrans within hours after the rain stopped falling.

The River Management Program provides technical assistance and regulatory authorization for repairs that involve work conducted in waterways. Such work includes channel dredging, bank armoring, and any other activity that involves modifying rivers and streams. The oversight is critical because in the absence of guidance, people often will take actions that inadvertently increase flood and erosion hazards.

The task was a monumental one for the department's four river engineers, and it quickly

became apparent that the normal regulatory approach of visiting every site where river work needed to be done was going to delay recovery efforts. To keep recovery efforts moving, river engineers during the first few weeks following the storm spent 16-hour days on the road visiting rebuilding projects and verbally authorizing others over the phone.

To aid efforts, Department of Environmental Conservation (DEC) reengaged one retired river engineer and reassigned three other staff with river-dynamics training. After the initial emergency was over, ANR returned to its usual policy of requiring written authorization for in-stream work to ensure accountability and make sure that the work being done would not exacerbate future flooding.

The very nature of conducting emergency work under such circumstances and on such a broad scale, however, created major challenges. DEC did not have enough river engineers to keep up with the demands for technical guidance. This is not surprising given that the volume of the damage created a situation where hundreds of emergency authorizations

were simultaneously requested by landowners and community officials who had just experienced significant flood-related losses and were fearful of more.

Also, repairs to critical transportation infrastructure or to protect homes and businesses

required that in-stream work be conducted before a full permitting and public notification process could be completed.

To expedite emergency repairs, ANR issued verbal permits – sometimes without benefit of a site visit – so that work was not

delayed. But given that the agency faced challenges with its communications systems, staff found it challenging to communicate decisions. As a result, the public often was not informed of what work was authorized, landowners were sometimes confused regarding the nature of what work they could conduct, and in other cases people either ignored the requirement to get in-stream authorization or acted beyond the scope of the authorization given.

In some locations, the Army Corps of Engineers intervened on work that was authorized by DEC river engineers, which only added to local confusion.

### Ongoing Recovery Efforts

In October, ANR ceased issuing verbal permits, and river engineers have now visited many locations where in-stream work was conducted beyond what was necessary to conduct emergency repairs. The agency is working with private landowners, municipalities and other state agencies like VTrans to identify these locations and establish repair plans. Work is being prioritized, with the most critical work being conducted immediately and the rest will be scheduled for 2012.

It should be noted that, in an emergency, towns and VTrans might need to use their own judgment to conduct stream alterations as necessary to alleviate public safety and other imminent dangers. The redirection of some of this work once the emergency has abated is a normal part of the recovery process.

### Other Environmental Hazards

While river work and its permit process garnered much attention, Irene also created other significant environmental hazards including:

- Hazardous household chemicals such as paints and cleaners were released into waters of the state;
- Public water supplies and wastewater systems were significantly damaged or submerged;



Route 107 opened by:  
Lt. Governor Phil Scott, Senator Richard Mazza,  
Rep. Patrick Brennan and Secretary Brian Searles.  
Photo by VAOT.

- Numerous water and sewer lines that cross waterways by suspension under bridges were damaged or destroyed;
- Water systems and private wells located along waterways were physically bombarded by debris floating down river, including by oil and raw sewage; and
- Oil and propane tanks were dislodged and floated downstream, where in some cases they remain unclaimed and washed up on riverbanks or entangled in debris because no one knows who owns them as all identifying markings were obliterated during the flood.

To help address these issues, ANR's Spill Response Team and the Division of Fire Safety's Hazardous Materials Response Team responded to numerous oil spills and hazardous-waste threats. ANR's Dam Safety Program monitored the state's flood-control dams and assisted landowners, and the agency's drinking and wastewater programs responded to numerous public-health challenges.

#### **ACTION:Continue Ongoing Remediation of Debris and Silt**

While many health and environmental threats have long been abated, debris remains an outstanding issue. DEC worked with local communities and the state's network of Regional Planning Commissions to identify debris piles of concern. These are mostly piles of woody debris, but may contain other materials such as washed out culvert pieces and propane tanks.

Debris determined to pose an imminent threat to infrastructure and buildings will be tackled right away. Less threatening woody debris will be carefully monitored, and removal plans will be developed only if needed. ANR has identified eighteen debris piles that have the potential to dislodge and therefore wash downstream and damage either highway infrastructure or private property, and staff is preparing plans on how to handle each location.

In addition to debris, river silt carried by floodwaters has been deposited, in some locations in large quantities, on both private and public land. ANR, the Agency of Agriculture

**Given the emergency nature of many Irene-related road and bridge repairs – coupled with the fact that many river channels have been changed significantly and some rivers still contain debris – there is uncertainty around the spring flood risks, particularly if heavy rains are coupled with rapid snow melt.**

and the Department of Health should develop a monitoring and assessment strategy that prioritizes testing to determine the likelihood that possible contaminants were deposited on farms, schools and other high-risk locations. Also, ANR will monitor for new silt berming that could exacerbate downstream flooding during the next high water event.

#### **ACTION:Establish Rapid Response Team to Monitor River Action**

Given the emergency nature of many Irene-related road and bridge repairs – coupled with the fact that many river channels have been changed significantly and some rivers still contain debris – there is uncertainty around the spring flood risks, particularly if heavy rains are coupled with rapid snow melt. ANR and VTrans have established an interagency work group and Rapid Response Team that will work with RPCs and local governments to monitor known high-risk areas and respond to flooding conditions as they develop throughout high precipitation and runoff periods over the winter and spring.

#### **ACTION:Maximize Federal Funds for Channel Stabilization and Debris Removal**

In addition to FEMA resources available to communities impacted by Irene, the USDA Natural Resources Conservation Service (NRCS) can provide funding for private property owners through its Emergency Watershed Protection (EWP) program. The EWP program received additional funding support

in the months after Irene and has been a critical program in filling the gap between FEMA assistance and the recovery needs of private landowners. Vermont-based NRCS staff have worked closely with ANR and VTrans to help landowners with riverbank damage or debris removal that could qualify for EWP.

ANR will ensure that NRCS is integrated in all future emergency plans. Once NRCS programs are underway, they provide a relatively quick and efficient funding source for private landowners who need immediate action to protect building or land impacted by river channel changes.

### **ACTION: Update Bridge and Culvert Hydraulic Design Manuals in Vermont**

As previously mentioned, land-use patterns are directly tied to damage that occurs during floods. With a changing climate predicted to increase both the magnitude and frequency of future weather events, develop-

ment decisions and construction practices made both on the state and local level will either reduce or increase future environmental degradation and damage to infrastructure such as roads, bridges and buildings.

It is recognized that in some cases undersized bridges and culverts played a role in the amount of damage experienced during Tropical Storm Irene. The primary guidebook that engineers use for sizing bridges and culverts

on public highways is the Vermont Agency of Transportation's Hydraulics Manual published in 1998. The principles of the manual are founded on risk management associated

with various flood levels and statistical analysis of Vermont's historic precipitation data. Since its publication, designers are now considering additional factors not documented in the manual. These include climate change and its influence on precipitation frequency and volume, the changes in Vermont's landscape, increased knowledge in the science of fluvial geomorphology (utilizing ANR's large geomorphic assessment database), and the recognition of aquatic organism passage.

In most cases, these newer factors are taken into consideration when VTrans sizes hydraulic structures. That is not always the case when towns perform work on their own. Further, with the existing manual, it has been difficult to get FEMA to participate in increased structure sizing when a damaged bridge or culvert is replaced with Public Assistance funds.

VTrans, in collaboration with ANR, will work on updating the Hydraulics Manual to include consideration of these additional factors as well as lessons learned from Irene and any others deemed necessary. They will work with FEMA to make the manual Vermont's standard for sizing hydraulic structures on public highways so that in the future, increased sizing is eligible for FEMA Public Assistance funding. Furthermore, they will work with Vermont Local Roads and other partners to help educate and train municipal officials so that right sizing of bridges and culverts is standard practice.

### **INNOVATION: Expand Best Practices Education for River Management**

To help protect rivers, ANR should establish a municipal education program regarding best river-management practices. The agency should cross train other staff so they can assist river engineers during emergencies. Information technology should be enhanced to increase river engineer's ability to communicate both efficiently and effectively in the field during a crisis situation. The creation of a national or regional compact with



Volunteers participating in Clean Up Day in Plymouth.  
Photo by M. Pingree.



other states and the federal government to share river-engineering expertise following major flood events also should be explored.

#### **ACTION: Coordinate Efforts to Protect Farmland**

Farms face many issues with rivers and streams, including stream-bank erosion, re-routed streams affecting agriculture production areas, and berms for buildings, roads and bridges, that can impact downstream farmland. At the same time, farmland may serve to reduce downstream flooding and erosion where located in the flood plain. AAFM and ANR should work together with the USDA to provide assistance to farmers so that they can better protect their fields while providing incentives for farmers to allow rivers access to fields located in flood plains.

#### **ACTION: Coordination with Federal Partners**

To alleviate community confusion, ANR must work with Army Corps of Engineers to ensure that future DEC emergency in-stream authorizations and Army Corps' requirements are consistent so that landowners do not receive conflicting guidance.

#### **POLICY: Review Flood Plain Management Policies**

Protecting flood plains and restoring flood-plain function can serve multiple needs including reducing future flood damage and the costs associated with protecting existing development. Our state and local land-use policies may need to be updated to reflect the recent knowledge we have gained about the risks of flooding. Through revising these policies, we can better develop a shared understanding and approach for protecting and promoting development in our downtowns and village centers, reducing future damage to critical public infrastructure and private property, and preserve our working landscapes of farms and forests.

The State should start a conversation

among local, regional and state agencies, as well as landowners, farmers, foresters, developers and other businesses to explore smart development in flood plains. The Irene Recovery Office will coordinate this discussion



Roger Whitcomb, Engineer and Sue Minter, Deputy Secretary.  
Photo by VAOT.

with state agencies and outside partners.

Additional state work should involve updating and communicating information gained about the nature and extent of future flood risks. Vermont should work with FEMA and local communities to ensure that both inundation and fluvial erosion hazards are considered when determining where development and redevelopment takes place. Communities that have opted not to participate in the National Flood Insurance Program (NFIP) should have sufficient information readily available so that they can understand the ramifications and future risks of that decision, as well as to the benefits of adopting or exceeding NFIP land-use standards.

State and federal community assistance programs also should provide education, training and incentives to assist local governments and help them protect shore lands, river corridors and flood plains. Coordinated land acquisition strategies that place a state-wide priority on protecting high-value (in terms of flood resiliency and environmental protection) shore lands, river corridors, flood

plains and wetlands should be considered and funded. Any change to law must consider the impact on agricultural land and farming practices that occur in floodways and flood plains. As a matter of state policy, it is imperative to maintain the accepted agriculture activities exemption to municipal ordinances currently contained in 24 VSA 4413(d). Failure to do so

potentially subjects Vermont's agricultural industry and its farmers to 251 different zoning regulations and enforcers.

Most towns, and their part-time zoning administrators, do not have the expertise to regulate agricultural

activities that occur in a flood way or flood plain. Centralized regulation of farming activities by the state provides all farmers with a standard framework within which to operate. This is particularly important because many farms utilize land situated in more than one town. AAFM and DEC will continue to collaborate on updating the current memorandum of understanding to satisfy FEMA that Vermont's agricultural regulations adequately protect fluvial erosion hazard zones and satisfy NFIP requirements for Special Flood Hazard Areas.

#### **POLICY: Evaluate Hazardous Waste Storage**

The emergency response to Tropical Storm Irene as it relates to hazardous waste was largely successful, although with such widespread damage there were areas for improvement.

Many flooded basements resulted in overturned fuel-oil tanks and floating propane tanks. DEC's spill team, even with help from EPA and Vermont's Hazardous Materials Re-

sponse team, was stretched to the limit during the first few days after the flood. Cleanup contractors ran short on equipment, and it took time to visit all spill locations. Efforts were further complicated by the fact that most spills were on private property and not covered by FEMA Public Assistance. The spill team, however, was eventually able to get contractors to all sites that were reported, while the joint response with EPA worked well.

Despite the best efforts of DEC, EPA and the state HazMat team, which included setting up hazardous waste collection and storage facilities, it is likely that hazardous waste from many flooded basements was thrown in the trash. While it is difficult to measure just how effective the State's Emergency Operations Center hazardous-waste education and outreach efforts were, we do know that much more hazardous waste was collected in some towns in the days and weeks following Irene than we would normally see in a year.

The State should evaluate the need to restrict storage of hazardous waste and materials in flood plains. And in places where such storage is allowed, the State should explore the establishment of regulations that require tanks in flood plains that store hazardous materials such as gasoline, fuel oil and propane be secured to the ground so that they do not easily tip over or float away during a flood. The State should continue its educational programs for citizens, business and municipalities at risk for future floods and encourage them to minimize or improve how they store hazardous materials.

#### **POLICY: Evaluate Emergency Response Powers for Environmental Hazards**

To plan properly for the next disaster, a common understanding of the statute and rules regarding emergency engagement is needed. In some cases, DEC's environmental rules expressly contemplate emergency response, and have defined exceptions for emergency circumstances. Despite this, the

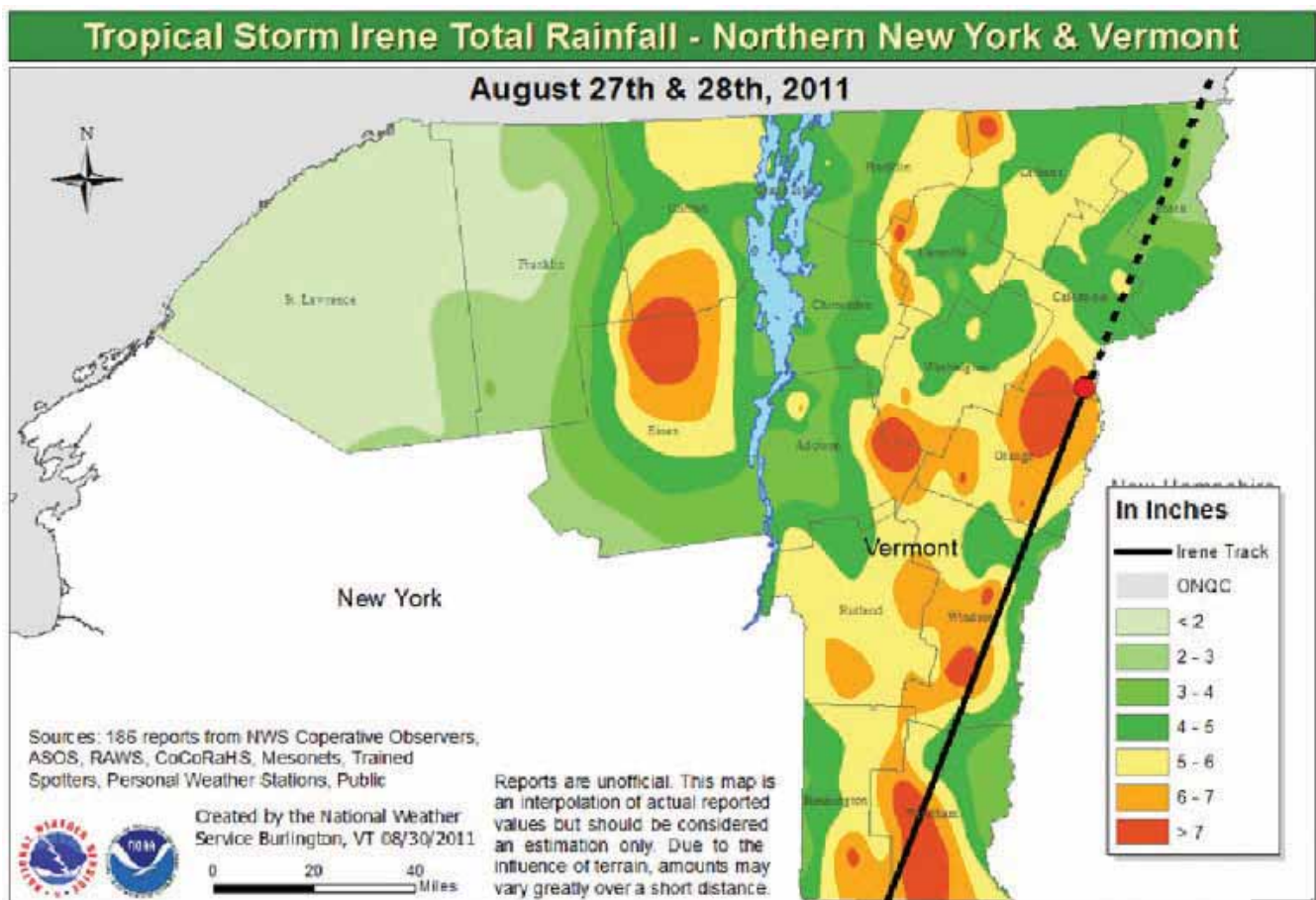


Silt deposit from the Connecticut River in the Long Island Sound. Photo by National Oceanic and Atmospheric Administration.

rules were not universally understood, which created uncertainty for state and local officials.

To correct this, review of DEC regulations regarding river and flood-plain management, spill response, solid-waste disposal, storm-water, and wetlands must be conducted to ensure that emergency work related to flood response proceeds expeditiously and without confusion.

Such a review should result in the development of rules and procedures that allow emergency responses to be permitted in a way that follows clear technical criteria, but at the same time provides flexibility to ensure that basic environmental and public health protections can be conducted promptly and without delay.



## Irene Damage: An opportunity to reflect on rebuilding a flood-resilient infrastructure

*The extensive road and bridge damage caused by Tropical Storm Irene provides us the opportunity to take a step back and reflect on the how, the why, and the where we build roadways throughout the State of Vermont.*

*The toll Irene took on Vermont's transportation infrastructure is now clear. On the combined town and state network, Irene washed out more than 2,000 roadway segments, undermined more than 1,000 culverts and damaged more than 300 bridges. Rebuilding everything will cost hundreds of millions of dollars.*

*Understanding that our climate is changing and that the frequency and intensity of storm activity will likely be greater during the next 100 years than it was during the last 100, it is prudent that as we rebuild we also adapt. But doing so successfully will not be easy.*

*Limited access roads such as our interstate highways and "super" Route 7 south of Rutland are highly engineered with bridges elevated well above Vermont's waterways. This type of roadway withstood Irene's wrath in most instances and sustained limited or no damage. It is highly unlikely, however, that we could afford – nor would Vermonters necessarily want – to build additional limited access roadways throughout Vermont.*

*Vermont's river valleys are steep and narrow, making it a challenge to successfully engineer state highways. With the river on one side, steep slopes on the other, and villages and homes in between, there is little space left for roads that safely accommodate cars, trucks, bicycles and, in some valley locations, a railroad line as well. Therefore, the long-term need to build more robust roads and bridges must be evaluated in conjunction with our desire to preserve Vermont's historic and archeological resources, as well as envi-*



Rich Tetreault, VTrans Chief Engineer.  
Photo by H. Tetreault.

*ronmental resources such as wetlands and wildlife habitat.*

*Our best opportunity to protect our transportation infrastructure against future flooding in these areas likely lies with our bridges. As we both rebuild from flood damage and replace aging bridges over time, we need to rethink their design. In the past, we built relatively short bridges with concrete abutments very close to, if not in, rushing water. These designs were cost effective and made environmental sense at the time.*

*The time has now come, however, to consider building longer bridges with foundations that sit outside our river channels, even if these bridges cost more and have a longer footprint. Doing this will accommodate future flood waters, as well as allow river channels to move and not be constrained by the bridge opening, which can exacerbate flooding up and downstream. Longer bridges also will improve passage for fish that are cut off from their habitat by undersized structures, and allow safe passage for other animal species as they pass through the transportation network.*

*In some flood-damaged locations, temporary bridges were erected. This will not only buy us the time needed to reassess the hydraulics of each location with modern storm events in mind, but also will provide communities the opportunity to work with VTrans to best locate these costlier and sometimes larger permanent structures within village centers.*



*As for town highways, the policy decisions are even greater and the choices more difficult.*

*In areas where roadways along rivers were badly damaged or even destroyed, towns may need to choose whether and where to rebuild. Redundant roadways, or those that serve one or two properties, may not make sense in the future. Communities must also reassess their land-use patterns and ask such questions as: How close to the water is too close to build? What kind of businesses or maintenance practices will be allowed where?*

*Land-use planning and zoning, stream-alteration practices, and consideration of future risks are all critical to the landscape of issues that need to be considered as we build a flood-resilient infrastructure for Vermont. Further constriction of river corridors will only lead to additional problems. Adding more impervious surfaces without proper storm-water retention controls affects water quality, and adds to future flooding woes.*

*Public policy should not focus solely on how to best design and construct our future transportation system. Properly maintaining what we already have is just as important.*

*Funding protective measures such as keeping ditches and riprap in good, working condition is vital. Roadway drainage systems such as ditches, catch basins, culverts – and even bridges – need to be kept free of debris and sediment so rushing water during a storm can flow freely and stay channeled within riverbeds, thereby minimizing or even preventing overflow onto roads and over bridges. When more waterway capacity is required in heavy rain events, rivers need access to their flood plains so that the excess water in the confined channel does not increase in energy and destructive capacity.*

*The wake of Irene's destruction offers us an opportunity to think more broadly across the variety of disciplines that road building now entails. As we rebuild Vermont, VTrans will work together with the Vermont Agency of Natural Resources as well as the Agency of Commerce and Community Development and other sister agencies so that we can build Vermont to be even stronger than Irene found her.*

Richard Tetreault is the chief engineer for the Vermont Agency of Transportation. §

# Prepare for Future Disasters

*To better prepare for future disasters, Vermont will apply lessons learned from Irene for planning, emergency response and recovery.*



Jamaica Town Command Center.  
Photo by Oliver Olsen.

With Irene more than four months behind us, and the emergency portion of our response now squarely in the rearview mirror, Vermont is beginning to review its actions with an eye toward improvement for the next event. Vermont Emergency Management (VEM) is leading this effort, and plans to publish a full “After Action Report” later this winter. Several big-picture issues, however, are already clear.

While the State and its many communities should be commended for taking extraordinary action during an unprecedented crisis, there are always areas for improvement. A broad analysis of how Vermont responded to Irene clearly shows at least four areas in which Vermont must make adjustments to how it responds to future emergencies.

- Vermont should embrace the Incident Command System (ICS) for all of state government, and within that system should augment its staffing and training for the State Emergency Operations Center (SEOC).

## Commanding Opportunity

When weather forecasters first began using “hurricane” and “Vermont” in the same sentence, Grafton Emergency Management Director Bill Kearns knew the potential for damage in his area was real. Historic data from the 1938 hurricane showed Grafton’s roads and bridges took a beating the last time such a storm blew through town, and he knew a rerun was possible.

On Thursday, August 25 – a full three days before Irene struck – Kearns organized a meeting of his town’s emergency officials to begin preparing. The storm eventually destroyed 45 of the town’s 55 roadway miles. But the damage, due to careful preplanning, did not cripple the town’s ability to respond to emergencies even though the town’s highway garage was located in a flood plain and was damaged in the storm.

“We had all of our equipment staged so it was not somewhere it could get isolated,” Kearns said.

Just a few miles down the road, Jamaica’s Emergency Management Director Paul Fraser tells a similar story. The day before the storm hit, he met with Jamaica fire officials to make sure they had all the tables, maps and other supplies they needed. They even went as far as changing the location of the town’s emergency headquarters because the fire station, which is located in the river’s flood plain, did not seem appropriate.

“I walked through on Saturday before the storm and I could see the fire station was not a good place to have a command post,” Fraser said. On Sunday morning, “we moved the fire trucks to various locations so they would not get stranded.”

Fraser moved the command center to the

Three Mountain Inn, which was located on higher ground and had everything, including bedrooms and a kitchen, that would be needed should a serious problem develop.

“The Three Mountain Inn had a generator,” Fraser said. “We expected fully to lose power.”

Jamaica and Grafton are two shining examples of Vermont towns that received heavy damage, but in the days and weeks following the storm were well prepared to deal with its aftermath in large part because of their pre-planning and organization.

In Jamaica, the damage was significant. Raging waters washed four homes downstream and heavily damaged others. Emergency officials needed to know where threats were occurring, and had to act fast, Fraser said. And they needed accurate information, so they used scouts to confirm what idle chatter and “rumors” were telling them, he said.

“Having been in command posts in the past, I knew you have to have visual aids so you can chart what is going on and see the visual patterns,” said Fraser, who spent 22 years in the U.S. Air Force. Mapping “has a huge impact on your understanding of what people are saying.”

Solid information not only led emergency officials to dispatch crews to build a “diversion dam” that saved two houses, but their mapping effort also showed them where people needed to be evacuated, Fraser said.

“We sent over a dozen ATVs into the hills and we rescued 34 people, four dogs, two cats and a parrot,” Fraser said. “We lost homes, but no lives.”

Down the road in Grafton, the situation

turned out different. Not nearly as many homes and lives were threatened, but roads and bridges all over town were “gone,” Kearns said. Estimates put the replacement costs at over \$5 million, which is a hefty sum considering the town’s annual budget totals just \$867,000, and winter was just a couple of months away.

Realizing most expenses would eventually be covered by federal emergency programs like those run by FEMA and the Federal Highway Administration, the big issue for Grafton was finding a way to raise money in the short-term so the work could start immediately and be complete by winter, rather than waiting until spring or beyond when federal reimbursement checks would arrive.

Getting a bank loan would take less time than waiting for FEMA, but the process was not immediate, Kearns said. So Grafton looked internally and borrowed from its fire and highway capital reserve fund, as well as its local school system, which had money on hand it did not need until later in the school year.

“This money was all available and added up to about \$800,000, and that carried us until we could get a bank loan,” Kearns said. “We weren’t going to allow any contractor out of town, and the way to keep them in town was to pay them, which is what we did.”

As a result, the vast majority of Grafton’s roads and bridges have already been rebuilt. Some destroyed culverts were even replaced with larger ones to better protect the town the next time floodwaters rise. §

- Towns that do not have an individual Emergency Operations Plan (EOP) should adopt one, while towns that do have such a plan should share “best practices” with their neighbors. The state must update its State Emergency Operations Plan (SEOP) and State Hazard Mitigation Plan, and make both readily available to municipal officials.
- State and local officials must improve information sharing during an emergency. Improvement is necessary not only for reliable two-way communication between state and local officials, but also to prevent repetitive

inquires from various state and federal sources during both response and recovery phases.



Missing bridge on Rt. 30 in Jamaica. Firehouse in the background. Photo by VOAT

- The State and its partners should improve their volunteer and donations management capabilities. Although plans had been prepared as part of the SEOP, they had not been field tested for a disaster on the scale of Irene.

There are many examples of specialty skills that are difficult to procure when the need arises. The ability to both manage donations and coordinate volunteers is such a skill.

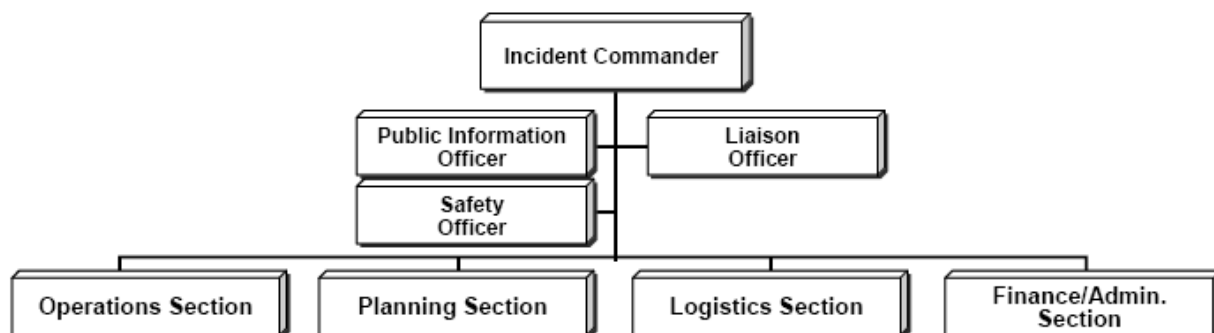
In the aftermath of Irene, large numbers of Vermonters stepped forward to donate labor, materials, supplies and equipment. Their generosity quickly overwhelmed some community's capacity to coordinate a response. Their people and support systems just could not match the armies of volunteers wanting to help with their neighbors in need.

In a small state such as Vermont that contains limited resources, the ability to manage such an outpouring can mean the difference between success and failure. Keeping volunteers and their organizations engaged and full of momentum is critical, and systems designed to do so effectively must be both adopted and maintained.

## ACTION: Increase Training on Incident Command System

The Incident Command System provides an organizational structure for incident management, as well as guides the process for planning, building, and adapting that structure to individual situations. FEMA explains: "the Incident Command System is a standardized, on-scene, all-hazards incident management approach that allows for the integration of facilities, equipment, personnel, procedures, and communications operating within a common organizational structure. ICS enables a coordinated response among various jurisdictions and functional agencies, both public and private, and allows common processes for planning and managing resources. ICS is flexible and can be used for incidents of any type, scope, and complexity. ICS allows its users to adopt an integrated organizational structure to match the complexities and demands of single or multiple events."

Agencies across Vermont state government should consider increased training on ICS as the standard operating guideline for responding to both statewide and agency-specific events. Key personnel in the executive branch – agency leadership and their core management team – should be trained in both basic ICS and National Incident Management Systems (NIMS) so they better understand the functions of the SEOC during its activation and are better prepared to respond during times of emergency.





The full support and preparation of every agency's senior leadership is paramount to successful outcomes. Training and regular participation in ICS drills will provide agencies a strong platform from which to build future responses, which will lead to a common understanding both within and among agencies of what is necessary to deliver the most effective emergency response.

The SEOC when activated acts as a multi-agency coordination center, and its effectiveness relies on the strength of those assigned to its service. Ensuring that appropriate officials from every state agency are trained in EOC management will greatly improve the productivity at the SEOC in the future. To ensure proper operations, agencies must create a "bench" of at least three trained personnel who are authorized to fully execute their State Support Function at the SEOC, or, at a minimum have immediate access to others who are authorized.

#### **ACTION: Update SEOP and State Hazard Mitigation Plan**

As we analyze the lessons learned from Irene, it is an appropriate time to update the State Emergency Operations Plan (SEOP) and the State Hazard Mitigation Plan. These updates will provide the opportunity to be more prepared for incident response and recovery support, and to improve our state's resiliency during the next disaster. Both plans will be prepared for the Governor's consideration by July 2012.

The SEOP, as required by 20 VSA, is a state-level integrated emergency management document that describes the Vermont emergency disaster response and response support process and serves as a guideline for all phases of comprehensive emergency management. The plan is intended to be "All Hazards," covering the entire range of emergency and disaster situations from natural disasters and technological hazards, to the impact of the threat of terrorism. Although it is called

a "State Emergency Operations Plan," the scope extends from preventive measures and preparations through local and state response actions, to recovery, post-disaster programs and Federal Disaster Assistance.

The State Hazard Mitigation Plan must be reviewed every three (3) years or as needed after every significant incident. The purpose of the Hazard Mitigation Plan is to assist local governments in identifying all hazards facing the county and their jurisdiction and identifies and outlines strategies to begin reducing risks from identified hazards. The plan is also intended to better integrate and consolidate efforts of state agencies with those of regional and local government, as well as efforts of quasi-governmental organizations such as the RPCs.

#### **ACTION: Encourage Towns to Update and/or Develop an Emergency Operations Plan**

Achieving and maintaining effective community preparedness is the first line of defense against disasters, and can greatly reduce the stress placed on response organizations. An effective level of preparedness requires continual public awareness and education to ensure residents

and businesses take proper precautions to reduce their vulnerability both during and immediately following a disaster's impact. Proper preparedness not only reduces danger, but outlines

response techniques that enhance protective actions. Preparedness activities include planning, training, conducting exercises and running drills.



Route 7 bridge in Clarendon.  
Photo by VAOT.

It was evident throughout the response to Irene that jurisdictions that had participated in both training and planning related to Emergency Operations Plans were best prepared to respond to the disaster. As a minimum, every Vermont town is expected to develop and maintain a Basic Emergency Operations Plan (BEOP). Larger jurisdictions with more significant risk and resources are expected to expand upon the basic plan and develop a more detailed local Emergency Operations Plan (EOP) or Emergency Response Plan. In addition to these plans, a Local Emergency Planning Committee (LEPC) is expected to develop and maintain an “all-hazards” District Resource Plan.



Washed out section of Route 106 in Weathersfield.  
Photo by VAOT.

The State should stress with communities the importance of having a designated Emergency Management Director or Emergency Management Coordinator, as well as proper training for other town officials. Working with partner organizations such as the Vermont League of Cities and Towns, the Regional Planning Commissions or the

Vermont Secretary of State’s office, the State could develop a training workshop for interested communities, highlighting best practices that emerged during the Irene response.

### **ACTION: Develop Community Communication System**

Throughout both the response and recovery from Tropical Storm Irene, there were challenges to communicating information, gathering data and getting questions answered. Significant issues included:

- Communities struggled to send and receive information within their community, be-

tween communities and to the State in an efficient and effective manner;

- Identifying individuals with specific needs so that communication strategies are in place to alert them before the event as well as follow up during the response;
- During the response, state agencies were not consistent in how they staffed emergency offices, how they made decisions and how they answered questions. Having three key agencies displaced from their offices with no access to phone, computers or copiers compounded these issues; and
- Both during the response and the recovery, state agencies had no common way to communicate recovery goals, identify partners, detail initiatives, broadcast successes, share lessons learned and chart milestones.

Solving each of these communication challenges will require a unique solution. A variety of options must be researched, explored, and tested based on the communication goal, its audience and the technology available. VEM will be responsible for leading this initiative.

One option to help improve communications during the response phase of an emergency is to develop a statewide platform for communities to engage with not only each other, but also with regional groups as well as state and federal partners. Successful development may take advantage of existing capabilities, or could demand new systems that integrate necessary information.

Communities have voiced the need for state support to ensure they have adequate communication tools and maps to help them locate citizens in need as well as track emergency responders. Many Vermont towns lack adequate cellular coverage to facilitate communication when landlines are down. While some communities relied on modern technology and Internet communications to reach their citizens, our most vulnerable populations may not always have access to this type of service. In some areas, door-to-door census

taking occurred, not only during immediate storm response but also weeks afterwards to ensure the safety and wellbeing of neighbors.

In place of ad hoc inquiries by individual sources, requests for information should follow a structure that is outlined in an Incident Command System. This would allow not only an organized process, but also is the best way to ensure that all information is shared among as many entities as possible.

Further development and expansion of State Rapid Assessment and Assistance Teams similar to VTrans Scan Tours should be discussed. A common criticism from town officials was that there were too many state groups asking the same, if not similar questions. Improved Assistance Teams or Scan Tours could include multiple agency representation that is able to canvass towns. Such coordination would minimize duplication of time and effort among agencies and better serve towns.

The scope of roles performed by the RPCs and VLCT also should be examined and integrated into building a more robust communication platform. RPCs played an invaluable role during Irene in collecting and distributing critical information such as damage data, as well as working directly in the field with affected communities. VLCT provided a trusted two-way conduit of authorized information to, as well as accurate on-the-ground intelligence from towns. VLCT also provided specialized assistance to municipalities, especially in the area of addressing financial issues. These organizations' collective expertise should be institutionalized for future deployment, and their members given proper training and resources to meet these expectations.

#### **ACTION: Develop Goods Management Strategy**

When the State Emergency Operations Plan was activated, a Donations Coordination Team led by the Department of Buildings and General Services was assigned to coordinate

and facilitate matching the needs of those affected with donated goods. Prior to Irene, Vermont had never tried to manage and coordinate an effort of such considerable size, so no one was surprised that the team had to work through numerous challenges to create a baseline strategy for the management of donated goods.

Through this effort, Vermont joined the National Donation Management Network (NDMN), which is a nationwide database that allows affiliated organizations to accept donations on behalf of survivors. The process served Irene recovery well, and the Donations Coordination Team trained dozens of Vermonters involved with the state's various Long Term Recovery Committees to use the network. NDMN proved to be an important tool to help coordinate a comprehensive disaster response, and its use should continue when Vermont faces another disaster. The Donations Coordination Team has successfully trained VEM staff in the ongoing administration of the system to ensure its usability during the continued Irene recovery phase.

In addition, a robust goods-management strategy should contemplate various contingencies depending on the size and scope of the disaster. The State Emergency Operations Plan should be updated to incorporate best practices as learned during Irene response and recovery.

#### **ACTION: Improve Volunteer Management Capabilities**

People came forward from all corners of the state to lend a hand and become part of the response-and-recovery effort. The outpouring of generosity and support was more than many communities could manage. Volunteers usually come in two types: those who are affiliated with a group or organization, and those who individually and spontaneously offer their services.

Having a central place where volunteers, whether affiliated or spontaneous, can go

for information is critical to a successful response. Not only do volunteers require direction, they also need guidance on what to stay away from. Aside from personal protection, liability issues must be addressed. This is



Volunteers participating in Clean Up Day in Plymouth.  
Photo by M. Pingree

most acute with unaffiliated volunteers. Just what happens if a volunteer becomes injured, hurts someone else or damages someone's personal property must be considered ahead of time.

Vermont law does not appear to recognize or protect the efforts of unaffiliated volunteers. Legislation should be considered that provides unaffiliated volunteers either the same protections as is granted by Good Samaritan Law, or possibly the same protections bestowed upon bona-fide first responders.

In February, VEM will host a FEMA-sponsored workshop on best practices to harness the power of spontaneous volunteers while providing them direction in the field and protection from unsafe situations. From this workshop, working with SerVermont, the State should establish a Volunteer Vermont Coordinator to coordinate the vast network of volunteer-management groups and the associated issues that come with volunteerism. Irene has taught us that volunteer support is critical to our state's success in the future. In an effort to harness this energy, we should act to develop programs and safeguards that en-

courage ongoing efforts to support our neighbors in need both during times of crisis and whenever we are called on.

### **INNOVATION: Establish Higher Education Volunteer Council**

Vermont's higher education community was an important part of the volunteer effort following Irene. Many campus groups mobilized in their areas and immediately responded to devastated communities and helped homeowners and towns begin the monumental task of cleaning up following the storm. Campuses like UVM and Champlain College that were located outside of the Irene-damaged areas worked to help Vermonters in need by organizing volunteer groups, transportation, equipment and lunches to get their students and faculty out in the field.

In addition to helping families clean up from Irene, many of our colleges enhanced current curriculum – and created new courses – around emergency response, disaster preparedness and community service. Colleges also found ways to engage beyond their campuses through alumni networks, parents of students and partners in the business community.

Following the initial response, a group of Vermont higher education stakeholders convened a meeting to discuss the creation of a coordinated system that will be tied into the Irene Recovery Office to continue to provide students and faculty an avenue for volunteering during long-term recovery. Outcomes of a newly formed Higher Education Volunteer Council (HEVC) would include a coordinated volunteer network targeted towards identified long-term recovery needs, student fellowships with LTRCs, applied community development, and research surrounding environmental impact and policy development.







# Appendix A: Common Abbreviations

**AAFM** - Vermont Agency of Agriculture Food and Markets  
**ACCD** - Vermont Agency of Commerce and Community Development  
**AGC** - Associated General Contractors of Vermont  
**AHS** - Vermont Agency of Human Services  
**ANR** - Vermont Agency of Natural Resources  
**AOT** - Vermont Agency of Transportation  
**ATV** - All-Terrain Vehicles

**BEOP** - Basic Emergency Operations Plan  
**BISHCA** - Banking, Insurance, Securities and Health Care Administration

**CAA** - Community Action Agencies  
**CAN** - Coordinated Assistance Network  
**CDBG** - Community Development Block Grant  
**COOP** - Continuity of Operations Plan  
**CVOEO** - Champlain Valley Office of Economic Opportunity, Inc.  
**CY** - Calendar Year

**DAIL** - Vermont Department of Disabilities, Aging and Independent Living  
**DCF** - Vermont Department for Children and Families  
**DDIR** - FHWA Detailed Damage Inspection Reports  
**DEC** - Vermont Department of Environmental Conservation

**EDA** - United States Economic Development Administration  
**EMT** - Emergency Medical Technician  
**EOC** - Emergency Operations Center  
**EOP** - Emergency Operations Plan  
**EPA** - United States Environmental Protection Agency  
**EWP** - Emergency Watershed Protection Program

**FDA** - Food and Drug Administration  
**FEMA** - Federal Emergency Management Agency  
**FEMA IA** - Federal Emergency Management Agency Individual Assistance  
**FEMA PA** - Federal Emergency Management Agency Public Assistance  
**FHWA** - Federal Highway Administration  
**FHWA ER** - Federal Highway Administration Emergency Relief  
**FPR** - Vermont Department of Forests, Parks and Recreation  
**FY** - Fiscal Year

**GIS** - Geographic Information System

**HEVC** - Higher Education Volunteer Council  
**HMGP** - Hazard Mitigation Grant Program  
**HUD** - United States Department of Housing and Urban Development

**IA** - Individual Assistance  
**ICC** - Incident Command Center  
**ICS** - Incident Command System

**LEPC** - Local Emergency Planning Committee  
**LTRC** - Long Term Recovery Committees

**MOU** - Memorandum of Understanding  
**NDMN** - National Donations Management Network  
**NFIP** - National Flood Insurance Program  
**NIMS** - National Incident Management System

**PA** - Public Assistance  
**PCBs** - Polychlorinated Biphenyl

**RDC** - Regional Development Corporation  
**RPC** - Regional Planning Commission

**SBA** - Small Business Administration  
**SEOC** - State Emergency Operations Center  
**SEOP** - State Emergency Operations Plan  
**SOS** - Starting Over Strong  
**SSTS** - State Snowmobile Trail System  
**SUV** - Sports Utility Vehicle

**USDA** - United States Department of Agriculture  
**USACE** - United States Army Corps of Engineers  
**UVM** - University of Vermont

**VACC** - Vermont Agriculture Credit Corporation  
**VAOT** - Vermont Agency of Transportation  
**VBSR** - Vermont Business for Social Responsibility  
**VCF** - Vermont Community Foundation  
**VDH** - Vermont Department of Health  
**VDRF** - Vermont Disaster Relief Fund  
**VEDA** - Vermont Economic Development Authority  
**VELCO** - Vermont Electric Power Company  
**VEM** - Vermont Emergency Management  
**VHCB** - Vermont Housing and Conservation Board  
**VLCT** - Vermont League of Cities and Towns  
**VLTRG** - Vermont Long-Term Disaster Recovery Group, Inc.  
**VOAD** - Voluntary Organizations Active in Disaster  
**VRC** - Vermont Recovery Corps  
**VSA** - Vermont Statute Annotated  
**VTTrans** - Vermont Agency of Transportation



# Appendix B: LTRC Contact Information

## **Central Vermont LTRC (Barre/Washington County)**

(802) 505-9292, joellen@volunteervt.com

## **Mad River Flood Recovery (Waitsfield, Warren, Fayston)**

(802) 496-6089, Irene.waitsfield@gmail.com

## **Southeastern VT Irene LTRC (All of Windham County)**

802-257-4547 x109

## **Upper Valley Strong (N. Windsor/L. Orange/Hartford)**

upervalleystrong@gmail.com, www.uvstrong.org

## **Precision Valley DRC (Springfield/Grafton/Chester/Ludlow)**

(802) 885-8862, pvdisasterrecoverycommittee@gmail.com

## **Good Night Irene LTRC (Bennington)**

(802) 447-2745

## **Third Branch Flood Recovery (Randolph, Brookfield, Braintree, Bethel, Rochester, Hancock, Granville, East Granville (Sub-group of Upper Valley Strong)**

(802) 229-8862

## **Rutland County LTRC (entire County of Rutland)**

(802) 786-5852

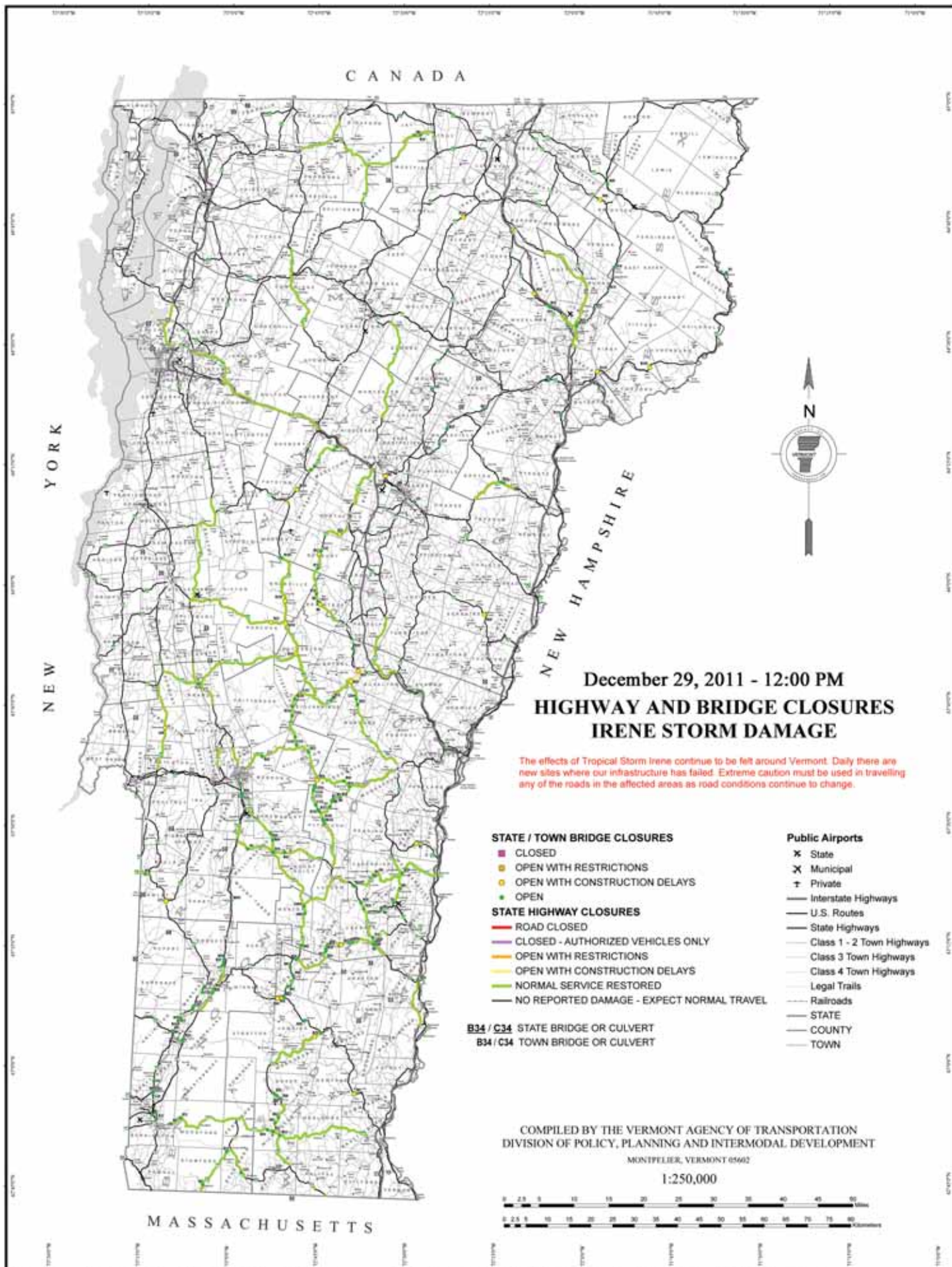
## **ReBuild Waterbury (Waterbury, Duxbury, half of Moretown, part of Bolton on its Waterbury side)**

(802) 839-6000, rebuildwaterbury@gmail.com,  
www.rebuildwaterbury.org

## **Northfield/Roxbury LTRC (Northfield, Roxbury)**

(802) 505-7648, northfieldfloodrelief@yahoo.com

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**Neale F. Lunderville**  
**Irene Recovery Officer**  
**- in collaboration with -**  
**Irene Recovery Coordination Team**